

*National*  
**SAFETY  
NEWS**

MARCH 1956

Two Sections — Section I

1956

annual  
safety equipment  
issue



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## 20th Annual Safety Equipment Issue

Two Sections:

Section 1

Section 2:

Service Guide 2.1

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# National SAFETY NEWS

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## What To Buy

## Where To Buy It

**THIS ANNUAL** Safety Equipment Issue, our twentieth, is designed for continuing reference in checking, developing and revising safety procedures in industry and in purchasing equipment, materials, and services. It aims to provide:

- Useful data on basic principles, practice, equipment for promoting accident prevention, occupational hygiene, fire protection, and first-aid service.
- Where to obtain these essentials for a comprehensive and effective safety program.

Classified lists make this buying directory helpful in the location and purchase of products and services by conveniently arranged listings of who offers what and where they can be found. This year these lists have been enlarged to include regional distributors as well as manufacturers.

This issue will be found helpful as a source of information on many topics. A list of the main divisions, their general scope and where they appear are shown in the table of contents. Topics presented in each section are listed on the frontispiece. For information on specific items, the cross index will be helpful.

The bibliographies in each section offer suggestions for further reading. Conspicuous among the references is the new edition of the Council's *Accident Prevention Manual for Industrial Operations*.

Every safety man's library should include a file of catalogs which are of practical interest to his operations. In preparing this issue the editors found these catalogs extremely helpful—interesting, too.

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# Fatalities Up In 1955

Increased employment and motor-vehicle mileage boost totals. Only farming recorded fewer deaths

THERE were approximately 14,200 deaths from work accidents in 1955, or 200 more than in 1954. Increases were recorded in three of the eight principal industrial groups; a decrease in one.

The death total for manufacturing was 2,400, or 100 more than in 1954. Transportation industry fatalities numbered 1,300, an increase of 100 from 1954. An increase of 100 also occurred in trade, raising the total to 1,400. In agriculture, deaths decreased 100—from 3,800 to 3,700. For the other industrial groups the 1955 death totals were the same as in 1954: Service 2,300; public utilities 200; construction 2,400; mining, quarrying, oil and gas wells 800.

Nonfatal injuries totaled approximately 1,900,000, compared to 1,850,000 in 1954. Permanent impairment cases numbered about 75,000.

Employment in all industries during 1955 was about 3½ per cent more than in 1954. In manufacturing alone, employment increased 5 per cent.

Accident rates cannot be computed at this time on a national basis. Preliminary information indicates that the all-industry frequency rate probably was about the same as in 1954. Nonfatal injuries, as noted above, increased about 3 per cent. Employment was up 3½ per cent and average hours worked rose ½ per cent—a total increase of approximately 4 per cent in exposure.

## Accident Costs

Wage loss, medical expense, and the overhead costs of insurance for work accidents in 1955 amounted to about \$1,800,000,000. The so-called "indirect" costs are estimated at \$1,500,000,000. These include such items as time lost by workers other than the injured, time lost by workers whose injuries were not serious enough to be classified as temporary total disabilities, interference with production schedules, and property damage. Total costs thus were about \$3,300,000,000.

## Off-the-Job Accidents

In addition to the work accidents, the nation's productive capacity was

## THE NATIONAL ACCIDENT FATALITY TOLL

	1955	1954	Per Cent Change
All Accidents .....	92,000	89,432	+3
Motor-Vehicle .....	38,300	35,586	+8
Public Non-Motor Vehicle .....	16,000	15,500	+3
Home .....	27,000	27,500	-2
Work .....	14,200	14,000	+1

Note: The motor-vehicle totals include some deaths also included in work and home totals. This duplication amounted to about 3,500 deaths in 1955 and 3,100 in 1954. The 1954 all-accident and motor-vehicle death totals are the official figures of the National Office of Vital Statistics. All others are National Safety Council estimates.

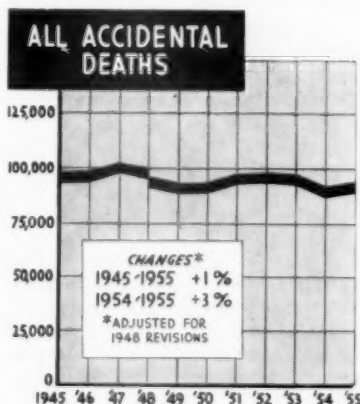
lowered by off-the-job accidents of workers. The 1955 death toll from these accidents was approximately 31,000 and the injury total about 2,350,000. Accidents to workers, on and off the job, thus totaled 45,200 deaths and 4,250,000 injuries. The time lost during the year from these accidents, and from less serious injuries and indirect losses, amounted to approximately 295,000,000 man-days.

## Fire Loss

The 1955 total of property destroyed by fire was \$885,000,000, according to the National Board of Fire Underwriters. This was 2 per cent more than the comparable 1954 total. In 1954 nearly half of the loss from building fires was in industrial and business establishments.

## Industrial Commission Records

Deaths reported to Industrial



Commissions in 21 states during 1955 totaled 6,778, or 2 per cent more than were reported in 1954. Increases of 3 to 62 per cent were recorded in 12 states, decreases of 1 to 18 per cent occurred in nine states.

	1955	1954	Per Cent Change
Totals for 21 states	6,778	6,647	+ 2
Alabama (8 mos.)	67	74	- 9
Arizona	66	58	+14
California	1,057	990	+ 7
Connecticut (11 mos.)	63	39	+62
Florida	158	153	+ 3
Georgia	168	171	- 2
Illinois (11 mos.)	237	288	-18
Kentucky	65	67	- 3
Massachusetts	569	577	- 1
Missouri	100	71	+41
Nebraska	89	80	+11
New York	1,683	1,735	- 3
North Carolina	121	145	-17
Oregon	141	146	- 3
Pennsylvania (11 mos.)	665	675	- 1
South Carolina	82	72	+14
Texas	594	544	+ 9
Virginia	222	185	+20
Washington	242	208	+16
West Virginia	289	253	+14
Wisconsin	120	116	+ 3

## Railroad Accidents

Deaths of railroad employees on duty, except those occurring more than 24 hours after the injury, numbered 178 in the first nine months of 1955, an increase of 19 per cent from 1954. Injuries with more than three days disability numbered 13,236 or 9 per cent more than in 1954.

## Coal Mine Accidents

Deaths in coal mine accidents during 1955 totaled 410, or 4 per cent more than in 1954, according to a preliminary report of the U. S. Bureau of Mines. However, the 1955 total is one of the lowest on record. Falls of roof or face resulted in 226 deaths, or 55 per cent of the total.

# Accident Investigations

The competent investigator doesn't stop with the cause and remedy for a specific accident; he goes on to re-evaluate the entire program in light of that accident

By D. PAUL COCHRAN

**ACCIDENT INVESTIGATION** is the best tool a safety engineer could have at his command. Every case investigated is in itself an evaluation of the particular safety program with the facts revealed. We should find the strong and weak places of the entire program. Each fact ascertained will point directly to a well-established program component and the need for further investigation of the part concerned.

The injury being investigated may reveal a failure to use protective apparel. This, of course, would pinpoint a possible revamping of the protective apparel program or a need for further evaluation in the use of such equipment. The injury may have resulted when a parts wagon struck a hole in the deck, causing it to overturn, damaging critical category equipment and causing injury to a skilled workman.

If the investigator caused the hole in the deck to be repaired and stopped there, he would be selling short his entire program. Rather than worry about one hole in the deck he should go on upstairs, sit down with top management and re-evaluate the plant's entire maintenance program. He would patch a lot of holes at one meeting.

## What type accidents should be investigated?

The principal purpose of accident

investigation is to obtain information that will help in the prevention of accidents. All accidents are important, regardless of the degree of seriousness of the resulting injury. It is a false generalization to say that only accidents causing disabling injuries should be investigated. Most accidents are potentially serious. First-aid cases as well as those causing death or serious injury should be investigated. The payoff for all your efforts comes when an unsafe practice or method is involved and a serious injury at some subsequent time is prevented.

## Near accidents

The near accident that might have caused death or serious injury should be investigated with equal emphasis and interest as the ones that really happened—the failure of equipment, breaking of a line, failure of a scaffold, should point to a re-evaluation in such areas.

## When should the investigation be made?

The investigation should commence immediately after the accident and continue until it is complete. Certainly, no effort should be made to prepare any part of the report until the investigation has been completed. A thorough investigation will reveal causes that will make corrective action so obvious that a tyro could prepare the report.

A delay of only a few hours may permit evidence to be removed, destroyed or forgotten, intentionally or unintentionally. In some cases a day later, witnesses have been known to completely change their version of what actually happened.

## What information should be obtained?

The report on the accident, whether prepared at the time of the investigation or prior to it, should contain certain identifying and basic information such as the worker's name, sex, age, and occupation; date, hour, and place of accident, type of accident, nature of injury, agency involved, activity of worker at time of accident, and a brief but complete description of the manner in which the accident occurred.

The above information represents a simple, straightforward recording of factual information relating to the accident, and in some cases this information alone may be all that is necessary to prevent recurrence. In many cases, though, while the accident itself may be only a simple occurrence such as a fall, a particle in the eye, an object dropped—the circumstances leading up to it may be very involved and complex. And it is these circumstances, or underlying causes, that must be identified and corrected in order to prevent recurrence of the simple end product—the accident.

It is not sufficient, for example, to know that a worker fell. It must also be determined why he fell—was he doing something wrong before the accident happened, or was there something wrong in the environment that set up the condition which ended in the fall. This is the kind of information that must be ferreted out if a recurrence is to be prevented.

If a worker got something in his eye because he was not wearing

D. PAUL COCHRAN is Safety Superintendent, U. S. Naval Air Station, Pensacola, Fla. This article has been condensed from an address at the 3rd Annual Safety Conference, College of Engineering, University of Florida.



goggles as required, it is not sufficient merely to report "particle in eye." It is not even sufficient to report that the worker was not wearing goggles. It should also be determined why he wasn't wearing his goggles. In a case like this, the information necessary to prevent recurrence is several steps removed from the actual accident itself, but the basic reason must be identified and corrected or similar accidents will continue to happen from the same "obvious" cause, "failure to wear goggles," which is not the cause at all.

There is some reason why the worker did not wear his goggles, and the investigation must find this reason. Although sometimes difficult to obtain, a determined attempt should always be made to find the basic reason.

#### **Who should make the investigation?**

Depending on the nature of the accident and other conditions, the investigation may be made by the foreman, the safety engineer, the workman's safety committee, the general safety committee, or if the accident involves special features warranting consultation and assistance of such persons, by an engineer from the field of operations concerned.

When investigations are made by persons other than specialists, it is important that these persons have training in the significance and importance of the principles of accident causes. Preliminary training should include at least a review of the American Standards Association's accident cause code Z16.2.

#### **The foreman**

The foreman should make an immediate report of every accident. He is on the ground, he probably knows more about the accident than anyone else, and it is up to him in most cases to put into effect whatever measures may be adopted to prevent similar accidents.

#### **The safety engineer**

A representative of the accident-prevention department should make an investigation of every important accident for his own information, and in most cases he should make a written report to the proper official or to the general safety committee.

Nowhere are the safety engineer's value and ability better shown than in the study of an accident. His specialized training and analytical experience enable him to get all the facts, apparent and hidden, and to

submit a report free from bias or prejudice. He has no interest in the investigation other than to get information which can be used to prevent similar accidents.

#### **The workman's safety committee**

In some companies, one function of the workmen's safety committee is to investigate and report on all serious accidents. This function is particularly important where a contributing factor was an unsafe act on the part of the worker because a statement to this effect made by this committee will create a much deeper impression among the workers than a similar statement made by the foreman or the safety engineer.

#### **The general safety committee**

In many companies, especially those of a small or moderate size, all accident-prevention activities are headed by a general safety committee, one of whose activities is accident investigation.

Regardless of what individual or what group of individuals makes the investigation, fairness is absolutely essential. The value of the investigation is largely destroyed if there is any suspicion that its purpose is to place the blame or pass the buck. No one should be assigned to investigation work unless he has earned a reputation for fairness, and is practical in gathering evidence.

#### **How should the information be used?**

Information obtained through investigations will not stop accidents unless put to use. First, results of the inquiry should be made known quickly because their publicity value in the accident-prevention education of workmen and supervisors will be greatly increased by promptness. Second, a definite program should be set up for using the information, and this should include at least the following applications:

- Correct the conditions or circumstances which contributed to the accident under investigation.
- Correct similar conditions or circumstances existing elsewhere in the plant.
- Publicize the accident on bulletin boards, in special reports, by use of posters, etc.
- Discuss the accident in accident-prevention meetings, in talks with employees, etc.
- Periodically, summarize and analyze all reports of accidents to focus attention on the circumstances which are causing repeated accidents.

#### **Causes found**

Too many investigators usually come up with the answer that "I have found the cause of the accident." In most cases nothing could be further from the truth. A thorough investigation will reveal many, many causes—direct, indirect, underlying and contributory.

Too many times in an investigation we assume a feeling and attitude of "allness." We are prone to say "I have found the cause, that is all there is and nothing more. There is nothing more to be done or said about the particular accident." We can take any given accident and talk forever about it and we still have not said all that could be said. When investigating accidents, to do a good job, we must look for causes, and not the cause.

#### **Accident investigation techniques**

To conduct successful accident investigations you must completely disarm yourself and let everyone know that the purpose of your investigation is constructive, not to disparage, penalize or condemn but to enhance the success of your program through the information you may obtain.

Let your reports in all investigations be factual, let the chips fall where they may but let it be known that their impact is constructive. When all of your people know that you have an attitude like this you will get facts and facts alone.

#### **Publicity**

Publicize accidents? Certainly. There is nothing more effective in your accident prevention program than thorough and comprehensive publicity of your disabling and other serious injuries. Let the people on the shop floor know what's happening and what's causing the accidents. There is nothing that would make the average employee feel more on the team than to be cut in on what's going on in your safety department. At the Naval Air Station, Pensacola, we publicize lost-time injuries by a yellow handbill. Also, your local newspapers will pick up and publicize your fatalities and serious accidents (they rarely ever mention the good points of your program). Beat the newspaper people to the draw by letting them know immediately what happened, how it happened, and what you are doing to prevent a recurrence.

And ask them to include a couple of descriptive paragraphs on your safety program.

# Ionizing Radiations

Radioactive materials are becoming increasingly important in industry and the sciences. And they are being used safely

**USE OF IONIZING** radiations has become an essential process in many industries and sciences and it will play an increasing part in our progress.

Sources of radiation range from a radon needle, not much larger than a common sewing machine needle, to a high-voltage x-ray machine weighing several tons and requiring a separate building to house the machine and its accessories.

The ionizing radiation may be gamma ray from radium, alpha ray from polonium, x-ray from a tube, or more recently, alpha, beta or gamma radiation or neutrons from artificially produced sources (radioisotopes). All these types of radiation are capable of producing injury to the body.

X-rays, gamma rays, and cosmic radiation are electromagnetic phenomena similar to visible light but are of higher frequency and therefore more penetrating. The other types are all moving charged particles. The injuries produced are qualitatively the same. There are quantitative differences due to differences in intensity and penetration.

Alpha radiation produces a great deal of ionization over its very small depth of penetration so that it is potentially very destructive. Since it is all absorbed in the horny layer of the skin it is not particularly important as a source of external radiation injury. It becomes serious when the dust of a radioactive material is taken into the body where it becomes a source of internal radiation.

Beta radiation is important both because of the possibility of radiation burns and internal radiation from absorbed materials. The beta particle carries only half the charge of the alpha so that it produces much less ionization along its path but its path is much longer.

Neutrons have great penetration in tissue because they have no charge and produce low specific ionization. They do produce some ionization and can be harmful, as shown recently by a number of cases of cataract in cyclotron workers whose eyes have been exposed to neutron beams.

Eight general types of injury from exposure to excessive amounts of ionizing radiation have been recognized: (1) x-ray dermatitis (2) induction of tumors (3) leukopenia (4) leukemia (5) anemia (6) bone necrosis (7) glandular disfunction (8) fetal injury.

X-ray dermatitis is ordinarily the first thing to be seen as the result of exposure to almost any radiation. It is characterized by rough, dry

skin, wart-like growths, and dry brittle nails.

Bone necrosis is very similar in form and in causation to the dermatitis. It has often been produced by overexposure to medical fluoroscopes, primarily through failure of radiologists to wear personal protection while operating the machine.

These types of injury are probably most commonly produced by local irradiation of tissue with a comparatively concentrated dosage.

The other types are more apt to be produced by whole body irradiation at low levels and for a long time. These conditions are apt to develop insidiously in industrial use and may be overlooked until serious harm has been done. Leukemia is the most studied of these conditions. Radiation anemia due to damage to



Badge worn by employee at Oak Ridge National Laboratory contains x-ray film which records radiation to which wearer has been exposed.

By F. A. VAN ATTA, Industrial Hygienist, National Safety Council.

bone marrow has been studied closely as one of the results of whole body irradiation in atomic bomb blasts.

In addition to these relatively well understood facts there is the possibility of direct fetal damage and of hereditary changes in the germ cell. Little is known about human heredity but it is known from animal experiments that radiation has produced a large number of mutations. This type of injury has never been considered in calculation of the tolerance dose which should be prescribed for workers around radiation processes.

## TOLERANCE DOSES

The question of a tolerance dose has had considerable study since 1902. It has been a continuous project of radiological societies. Committees have been set up by the British and American societies to provide a protection which would prevent "visible injury to the superficial tissues, derangement of internal organs, and changes in the blood."

The first requirement was to set up a value for the maximum amount of radiation which could be absorbed without producing these harmful effects, even if exposure were long continued or frequently repeated. The unit of measurement, the roentgen, is defined as the amount of x or gamma radiation which will produce one electrostatic unit of electric charge in one cubic centimeter of air under standard conditions.

This unit applies properly only to x or gamma radiation but it has been applied to the ionizing particles by introducing new units known as the roentgen equivalent physical or the roentgen equivalent man, indicating the quantities of other types of radiation which have the same biological effects.

Since this unit is in terms of energy absorbed per unit volume or mass of tissue, it makes a great deal of difference what part of the body is exposed to radiation. A total dose of 1000 roentgens applied to a single finger would have much different effects than a total dose of 1000 roentgens applied to the whole body, for instance.

The tolerance dose has always been calculated in terms of whole body radiation applied daily for a long period. The suggested dose was 2/10 roentgen per day in 1925 and has since been revised downward. The dose of 3/10 roentgen per week is now generally accepted.

External radiation can be kept down to a reasonable value by keep-

## MAXIMUM PERMISSIBLE TISSUE DOSE LIMITS IN "REP's" PER WEEK

Type of radiation	Relative biological effectiveness	At any point within the body	Dose in Roentgens Equivalent Physical In basal layer of Epidermis	
			Whole body exposed	Hand only exposed
X-rays and gamma rays....	1	0.3	0.5	1.5
Beta rays .....	1	0.3	0.5	1.5
Protons .....	10	0.03	0.05	0.15
Alpha rays .....	20	0.015	0.025	0.075
Fast neutrons .....	10	0.05	0.05	0.15
Thermal neutrons .....	5	0.06	0.1	0.3

For health monitoring, whole body exposure should be assumed when radiation is received to any portion of the body other than hands or forearms.

In the light of present knowledge, no manifest permanent injury is to be expected from a single exposure of persons to 25 roentgens or less, with the possible exception of pregnant women.

These limits do not guarantee no damage. They are based primarily on experience in lack of damage from 200 kv x-rays and comparison with other types of radiation. (From "Maximum Permissible Limits of Exposure Agreed on at the Chalk River Conference," K. Z. Morgan, *American Industrial Hygiene Quarterly*, June 1950.)

ing a sufficient distance away from the source, putting shielding between the person and the source, and by reducing time of exposure. Reduction of time of exposure and increasing distance from the source should be practiced as much as possible.

Whether shielding or distance is used, it is always a compromise insofar as the electromagnetic radiations are concerned since their intensity falls off by a logarithmic law and no thickness of shielding is going to be sufficient to completely eliminate x-rays, gamma rays, or cosmic radiation. It can only reduce them to a reasonably safe value.

The standard shielding material is lead. However, it is often more convenient to use other building materials as shields, particularly with x-rays from sources of relatively low intensity.

Personnel working around sources of radiation should carry personal

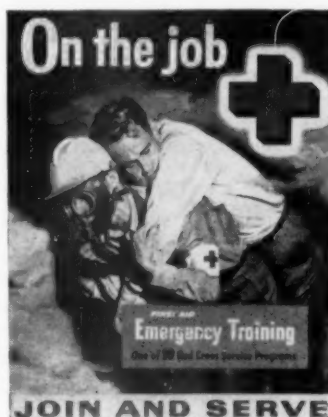
radiation monitoring devices. These may be either portable ionization chambers carried on the person or sensitive films with measuring echelons on them. Monitoring devices are available from a number of commercial organizations which take full responsibility for reading them and providing a permanent record of the exposure received by each individual.

In handling radioactive materials, prevention of internal hazards is more difficult than protection against external radiation exposures. Radioactive materials may be introduced into the body by ingestion, inhalation, or direct absorption through cuts or abrasions. Prevention of such contamination is a dust control problem but one very different from the ones with which industry is familiar. It is known that as little as one microgram of stored radium can produce serious injury, and not more than 1/10 microgram is considered the limit. To determine precautions in handling these materials, an arbitrary division of radiation intensities serves as a guide. The quantity of material is given in terms of curies, the unit of radiation intensity, which is the customary unit of measurement of radioisotopes.

With activities up to one millicurie it is possible to handle tracer experiments with only the customary precautions taken in the handling of chemicals. To assure against the possibility of some of the activities being concentrated in the laboratory the area should be monitored periodically.

In the range from 1 to 500 millicuries, shielding and special handling

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Posture chairs and tables of correct height aid efficiency and reduce fatigue in assembly and inspection operations. Light duty safety glasses with attractive frames are suitable for relatively non-hazardous work. Peaked caps are best around machinery and keep the hair clean when worn for general factory work. (Bendix Aviation Corp.)



## What's So Special About Women?

**With a few important exceptions, safety programs for women need not be specialized. But don't ignore those exceptions**

**LAWS TO PROTECT** the health and safety of women on the job go back to the 13th century when women in France were excluded from making carpets because it was "a grevius trade, trying to the physical strength."

Every state now has laws regulating the employment of women in the U. S., some of them so detailed as to specify the number of couches or beds which must be provided. Yet, with a few important exceptions which do not imply serious limitations, a safety program for women need not be specialized.

The same principles of safety apply, whether men or women are employed, with the same enforcement of safety rules and practices and the same control of job hazards. In most cases, existing facilities and equipment can be quickly adapted to accommodate the safety requirements of women employees. With the consideration of the fol-

lowing special points, both men and women workers will benefit and any nominal expense and effort on the part of management will be repaid in increased production.

### SELECTION AND PLACEMENT

The Women's Bureau of the U. S. Department of Labor has these suggestions for the successful placement of women workers:

1. Survey jobs to decide which are suitable for women.
2. Adapt jobs to fit smaller frames and lesser physical strength of women. (Generally about 60 per cent the strength of men.)
3. Provide service facilities in the plant to accommodate the anticipated number of women.
4. If the number of women employed justifies it, appoint a woman personnel director and the head of a woman counselor system.
5. Select women carefully and for specific jobs.

6. Develop a program for induction and training.

7. Maintain good working conditions.

8. Supervise intelligently.

9. Give women equal opportunity with men.

The Medical Department can be of help in selecting women for specific jobs. It should know job requirements to determine whether the applicant has the necessary physical and mental qualifications. Some of the factors include:

1. Skill and knowledge required.
2. Physical exertion required.
3. Operation hazards, exposure to moving machinery.
4. Amount of sitting and standing required.
5. Contacts with toxic dusts, fumes, gases, and odors.
6. Finger dexterity, vision required, whether working alone or with others.

Women are generally supposed to

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(Fiction)

Max, the veteran salesman, has a few words of wisdom for our S.E.'s new assistant, who learns that, in safety, you lose ground fast when you stand still

# The Boy and the Peddler

By BILL ANDREWS

March 15, 1956

I've just hired a new boy.

Larry Hyle finished in the bottom of the top third of his class at my old Alma Mater, Tech. He did a stretch as a reserve officer, and came into contact with safety work during his service in the Corps of Engineers.

He could probably pass a better theoretical engineering exam than I could right now, and some of the worst of the college greenness has rubbed off during his military service.

I suppose it's a sign of old age creeping up on me that his 23 years seem to me to be very few indeed, and that the six-foot frame seems to carry a small boy's face.

Yet he's older by a year at least than Harry Dexter was when he came to work for me a half dozen years ago, and Harry's now safety director at Jackson-Barnes—doing my old job very well indeed.

And, to bring the matter a little closer home, he's two years older than I was when I went to Monarch as cub safety engineer—and, if my own evaluation of myself was sound, I was a very wise and very mature man at that time.

If Larry is the greenest of the green, the youngest of the young in our profession, then Max is the opposite end of the age-scale. Nobody knows how old Max really is, but he was peddling some sort of rudimentary safety equipment line at the Milwaukee Congress of 1912. There's also a tale in safety circles that Max

really invented the slogan, "Safety First," but that, as Max admits, is false. "I put it on my letterhead in 1909," he says, "but I'd seen it stencilled on plant gates before that."

I was out on the shop floor today, hashing over a problem with some safety committeemen. Larry was in the office going over some old accident reports for a special tabulation I wanted.

When I got back to the office, Larry spoke to me about the work he was doing, and we chatted for maybe 10 or 15 minutes.

Then he said, casually, "There's some kind of a peddler out at the reception desk wanting to see you. I told him you were busy and to leave his card, and you'd call him. He made some kind of wisecrack and said he'd like to talk to me. I told him I was busy, too. He said he'd wait."

I wasn't in much of a mood for talking to salesmen at the time, but I called Larry on his failure to let me know the man was waiting. "Look," I said, "Purchasing is part of the safety man's job, and we should treat salesmen decently. I don't mean you should have run all over the plant after me, but you should have told me the man was waiting just as soon as I came in. By the way, what was the wisecrack he made?"

Larry said, "Something about time and tide waiting for no man, but fat men liking nothing better than busy clients who give them an excuse to sleep in reception rooms."

I picked up the phone and told the reception girl, "Send Max in."

It was Max of course—fatter than ever, tanned from a Florida vacation, puffing a little as he toted his sample case up the corridor.

It must have puzzled Larry to sit in on the semi-annual conference between me and my favorite safety equipment salesman.

First we disposed of the exchange of information on the health of our respective families. Then Max brought me up to date on which safety men were looking for new jobs, which were sick, which had died or retired, and which had come up with new ideas of merit.

Then we talked about the Exsteel plant—the latest headaches and the latest achievements.

He varied the standard approach to include Larry—giving him the latest news of the Tech campus (Max's own diploma is from an East Side New York trade school), plus some late dope on changes in Corps of Engineers' brass.

Then we returned to the standard procedure—taking a long walk through the plant, while Max chattered on merrily about trivialities, but while the bright, small eyes in his fat face looked and saw and filed what they saw.

I've said before that Max is the best safety inspector I ever knew except my first boss at Monarch. But to Larry the trip was a waste of time—entertaining, but uninformative. Halfway through it he sug-

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# WIRE FROM WASHINGTON



By Harry N. Rosenfield  
Washington Counsel, National Safety Council

THE LEGISLATIVE MILLS have begun to grind out committee actions which will be the basis of legislation in various safety fields.

**Highways.** Bipartisan agreement upon the principle of pay-as-you-go financing for a highway construction program may well have ended the basic cause for inaction at the previous session of the Congress. The President indicated he would accept financing through user and fuel taxes instead of the proposals made by the Clay Committee for a bond issue. In his economic message to the Congress, the President again called for a "modernized interstate highway system . . . to reduce the toll of human life exacted each year in highway accidents."

H.R. 8836 (Fallon) is the major highway construction bill being considered in the House. It provides for a 13-year, \$24.8 billion program to complete the interstate highway system, and includes increased authorizations for the regular federal highway grants to states. The President, in his economic message, and Secretary of Commerce Weeks in testimony before a House committee, urged completion of the construction program within 10 years. H.R. 9075 (Boggs) is the companion highway financing bill, to raise a total of \$12.2 billion of new taxes, largely through increased excises on gas and other fuel, tires, trucks, busses, and truck trailers.

At the last session, the Senate Public Works Committee had approved S. 1048 which would approximately double the authorizations for federal grants.

The "let's-do-something" attitude about highway accidents still prevails in the Congress. Senator Kuchel in a speech on the floor of the Senate spoke of "the continued slaughter and tremendous economic waste which can be traced directly to the shortcomings of our national highway system." Congressman Norblad announced that he was exploring every legal means of federal legislation to prohibit the manufacture of automobiles capable of

speeds in excess of 70 miles an hour or to require governors on all cars to prohibit speeds above that rate.

Commenting on the role of the National Safety Council in attempting to curtail motor accidents, the Congressman expressed uncertainty as to the proper jurisdiction of the Federal Government in the matter, but promised further exploration.

**Industrial Safety.** In his budget message to the Congress, the President said "we need effective measures to advance occupational safety . . . Therefore, I recommend that the Congress enact a new program to provide technical aid and limited financial assistance to the states for promoting occupational safety." The dimensions of this program are indicated by the proposal for a \$2.2 million supplemental appropriation. This program is a repetition of a recommendation made last year (See *Wire from Washington*, March 1955.) The Secretary of Labor publicly complained that the House Labor Committee had failed to schedule hearings on legislation submitted to carry out this presidential proposal.

In his economic message, the President said that "efforts to improve occupational safety and hygiene should be intensified; they deserve the fullest support of the Government, employers, employees and labor unions." Specifically, "to meet more adequately the industrial hazards faced by workers under federal jurisdiction," the President reiterated his recommendation of last year for an increase in benefits available under the Longshoremen's and Harbor Workers' Compensation Act.

Safety also figured very prominently in an important Supreme Court decision. This case involved employment in a battery-manufacturing plant requiring work with dangerous caustic and toxic materials. The employer required employees to change clothes prior to going onto the shift, and to shower and change clothes after the shift. The issue was whether the half hour daily required to change clothes and

to shower was compensable under the Portal-to-Portal Act. The Court said: "Safe operation also requires the removal of clothing and showering at the end of the work period. This has become a recognized part of industrial hygiene programs in the industry." Therefore, ruled the Court, such safety activities are not preliminary or postliminary in character, but "are an integral part of and essential to the principal activities of the employees," and consequently are compensable under the Portal-to-Portal Act. (*Steiner v. Mitchell*, January 31, 1956)

The Wage and Hour Administrator sustained a ruling of a hearing examiner that the temporary character of health and safety violations under the Walsh-Healy Act (such as lack of machine guards, failure to provide proper fire fighting equipment, and dangerous floor conditions) was no defense. However, evidence of substantial effort to rectify the unsafe conditions led the Administrator to allow a 30-day compliance period. (*In Matter of Loveman and Jones*)

The Atomic Energy Commission's regulations for licensing atomic reactors went into effect. A main concern of this licensing program, according to A.E.C., is public health and safety, and therefore particular attention is given to an applicant's "hazards summary report," in which every effort must be made to anticipate accidents of all sorts, and then to work out steps designed to keep those things from happening. In his economic message, the President said that within the Atomic Energy Commission "increasing emphasis will be placed on a broad study of reactor control and safety . . . and to study the mechanisms which cause reactors to be inherently safe."

The Interstate Commerce Commission's proposal for making railroad accident reports confidential, in order to obtain full information (see *Wire from Washington*, February 1956) ran into Congressional cross-fire. The rules have not gone into effect and are still under study. The I.C.C. also issued extensive amend-

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# CHECKING PERFORMANCE OF LOCAL EXHAUST SYSTEMS

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1. Changes in manufacturing procedures in the last few years have resulted in the use of more toxic materials and in the generation of more finely divided particles and greater quantities of smoke and fume. At the same time, there has been a greater effort to maintain a safe, comfortable atmosphere for the employee.

2. It has been estimated that about 80 per cent of the contaminants are controlled by ventilation, and today many operations have ventilation included in the original installation. Although a ventilation system is considered necessary for safety and comfort on new installations, responsibility for its satisfactory performance is seldom assigned to any one individual. Therefore, it frequently is not tested when put into operation and is allowed to become inoperative from lack of maintenance.

3. Excellent handbooks have been written on installation of local exhaust systems, but too little has been given on how to maintain them in top operating condition. There are two reasons for this lack of information.

4. First, a local exhaust system usually is not a piece of production equipment. Its maintenance may be slighted in favor of machines essential to the manufacturing process. Second, a local exhaust system has a dual aspect.

5. Strictly, it is an engineering or mechanical device, consisting of sheet metal, fans, motors, arresters, etc., whose performance is specified in terms of rate of air flow, static pressure, rpm, etc.

This Data Sheet is one of a series published by the National Safety Council, reflecting experience from many sources. Not every acceptable safety procedure in the field is necessarily included. This Data Sheet should not be confused with American Standard Safety codes, federal laws, insurance requirements, state laws, rules and regulations, or municipal ordinances.

This aspect is the responsibility of the engineer.

6. Yet the basic purpose of a local exhaust system is maintenance of health or comfort, and sometimes fire prevention. Its effectiveness is measured by how well it removes dust, fume, vapor, or gas that would otherwise make working conditions unsafe or unhealthful. This aspect is the concern of the industrial hygienist, who has been mainly responsible for developing exhaust and dilution ventilation for the control of atmospheric contaminants.

7. In the absence of an industrial hygiene engineer, the safety engineer is usually responsible for the exhaust system. Whenever necessary, he should consult the industrial hygiene personnel of the state health or labor department, of his company's insurance carrier, or of the home office if he is in a plant of a large corporation.

8. Management should try to develop in the plant engineer greater interest in the principles of local exhaust ventilation. Because these systems have been installed for health reasons, the

plant engineer may not feel responsible for their satisfactory performance. The safety engineer, on the other hand, who does have an interest in the safety of work places, is generally unfamiliar with the principles of such systems.

9. Therefore, in a plant which does not have an industrial hygiene engineer, neither the plant engineer nor the safety engineer pays much attention to ventilation systems designed for the control of air contaminants. In such a plant, the safety engineer should be concerned with the satisfactory performance of ventilation systems. With the guidance of outside industrial hygiene engineers, he can become sufficiently familiar with ventilation equipment and terminology to check, to some extent, the performance of local exhaust systems.

10. The purpose of this data sheet is to suggest methods by which a local exhaust system can be checked when first put into operation, to determine if it fulfills the specifications, and by which it can be rechecked at intervals; to determine when, where, and what kind of maintenance is needed for maximum efficiency.

11. The performance of the system should be the responsibility of the plant engineering and maintenance departments. If, as in many cases, this responsibility is not now assigned and the equipment is not maintained, then it may be well for the safety engineer to try to interest management in assigning the responsibility to the proper people.

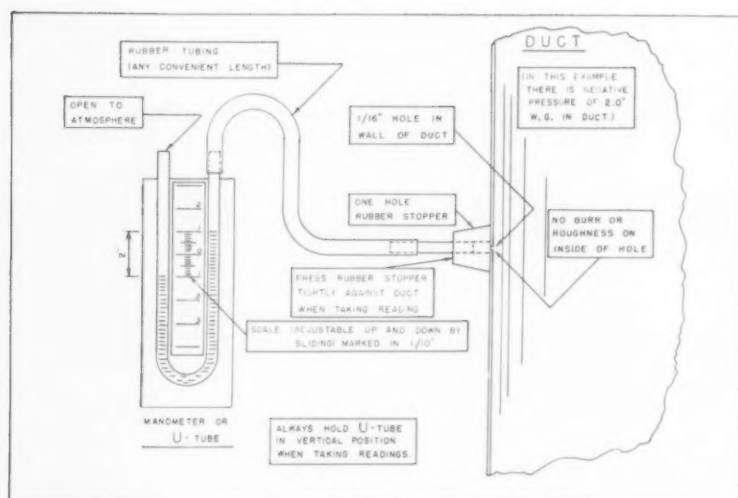


Figure 1. How to use U-tube (manometer) for measuring air pressure in ducts.

### Definition of Terms

12. A **local exhaust system** is one that removes an air-borne contaminant, such as dust, fume, vapor, gas, odor, or hot air, as near its source as possible. A general exhaust system, or general ventilation, by contrast, removes air from the room after the contaminant has spread. The general exhaust method merely dilutes the room air by bringing in clean outside air, while the local exhaust traps the material at its source before it is dispersed throughout the room.

13. A **hood** is a specially designed fitting at the entrance of the duct to cause the flow of air to form a pattern that will best control the contaminant. It is a partial enclosure around the source where the contaminant is produced, connected with an exhaust duct, usually round sheet-metal pipe, to an exhaust fan.

14. A **booth** is a hood, usually rectangular or box-shaped, that encloses the operation on the two sides, the top and bottom, and the back, with only the front or face open.

15. A **collector (arrestor)** is a device for removing the air-borne material from the air stream. It may be a cyclone or centrifugal collector for large-size particulate material like rough-grinding dust, or a cloth filter for finer dust, or a water-wash, fog or spray device, electrostatic precipitator, dynamic precipitator, or other type.

16. Every **exhaust fan** operates by inducing a suction or negative pressure in the duct leading from the hood. This means that the air in the duct is below atmospheric pressure so that room air rushes into the duct. This negative pressure is an indication of the air flow, commonly expressed in cubic feet of air per minute (cfm), that enters the duct. The negative pressure may be directly related to air flow or, in the case of a plugged duct, inversely related.

17. The negative pressure is easily measured by gauges of various types, the basic one being a U-tube or manometer (a piece of glass tubing shaped like a U, the legs being about 8 inches long) half filled with water. A rubber tube from one leg is held at the point where negative pressure is to be measured, and the other leg is left open to the atmosphere (Figure 1).

18. The **unit of pressure**, which may be positive ("blowing out") or negative ("sucking in") is inches of water, abbreviated w.g. (water gauge). It is the elevation of one water column above the top of the other.

### General

19. A good local exhaust system is a well-engineered project, based on precise design data—not merely a collection of piping.

20. Many states have codes that specify duct sizes and veloc-

ity of air in these ducts (hence, air flow in cfm) for different industrial processes and industries. These are minimum standards that must be met. Good engineering practice often calls for even larger air flows than those indicated in the codes. The engineer should have a copy of state regulations. Plans for new exhaust systems often have to be approved by the state before installation, and he should find out if this is the case in his state.

21. The engineer should secure a blueprint showing piping layout, if possible, together with data giving the cfm the designer intended to exhaust from each hood. For new systems, blueprints will be available. For old systems, the plant maintenance or engineering department may not have a drawing. It is still possible, however, that he can get the layout and data by writing to the sheet metal company from which his plant bought the equipment.

22. From this material he can determine whether an old system is the same today as it was when it was installed, or whether it has suffered the fate of all-too-many exhaust systems—has had extra branches added or changes made that may now render parts of it less effective.

23. Rare is the exhaust system that does not require understanding and cooperation on the part of the man who works at the process. Sometimes he has to modify his work habits to permit certain hoods to be used. The engineer should always find out just how the designer of the system intended it to be used. The engineer can often help by seeing that the men know the why of their exhaust systems and know how to use them.

### Air Samples

24. If the equipment handles silica dust, asbestos fibers, or other toxic materials, such as chromic acid mist, lead fumes or dust, or solvent vapors, the system may be exhausting the "correct" volumes of air (according to the blueprint), the fan and collector may be in A-1 condition—yet a health hazard may still exist. The final and all-important measure of whether an exhaust system



is controlling a hazard is whether the air in the working region is clean enough to breathe without injury. This question can be answered only by taking air samples and analyzing them to find out if the contaminant is below the maximum allowable limit.\* These tests are needed because a person cannot look at a dust cloud or smell toxic vapor and tell if the condition is unsafe.

25. Collection of air samples, both in general working areas and in ventilation ducts, is a principal activity of the industrial hygienist. It is, therefore, imperative that the safety engineer have such personnel secure this information. Not only does the collection of samples require extensive experience, but also the interpretation of the results and, equally important, the analytical procedures from which the results are ob-

\*Most state labor or health departments have now incorporated maximum allowable limits in their codes; these limits should be observed. Engineers in states which do not have such limits are referred to "Table of Chemical Hazards," Section 41, *Accident Prevention Manual for Industrial Operations*, 3rd edition (1955), published by the National Safety Council.

tained involve detailed and exacting methods for which experience and judgment are necessary. In the plant where an industrial hygienist is employed, the problem falls within his jurisdiction.

26. In the absence of a staff industrial hygienist, the safety engineer may obtain the services of the state bureau of industrial hygiene (in either the health or labor department), the services of the insurance carrier or of private consultants. Such services may also be found in institutes of industrial health or divisions of industrial hygiene in some of the medical schools or in schools of public health.

27. Once it has been determined through air samples that an exhaust system is keeping an exposure within safe limits, the negative pressure or "suction" in each branch duct, the pressure drop across the collector (if one is used), and the negative pressure at the fan inlet may be measured. At any future date, if rechecks show that these pressure readings are the same and if no changes have been made in the process, the hoods, or raw materials handled, it can be assumed

that the hazard is still under control. (Cross drafts, as from a man-cooler, will change the control.)

28. Arranging for air samples and suction tests is the responsibility of the safety engineer rather than the maintenance engineer. (It is also frequently considered a responsibility of the designer.)

29. When the air contaminant is not toxic but causes merely a comfort problem, little is gained by air sampling.

## Checking the System

30. For two reasons, it is well to make a complete check of the exhaust system. First, it can be determined whether it is meeting specifications for air volumes, resistance of ducts, horsepower, etc. Second, this information will be available for reference when the system is rechecked at later dates.

31. Some of the measures which will provide the safety engineer, in the absence of an industrial hygienist, with a program for checking the performance of a local exhaust system are discussed below.

32. **Layout.** The safety engineer should get or make a simple line drawing showing the layout of each main duct and branch, together with the location of the arrester, fan, and motor. He should measure the duct diameters and note them on the drawing. He should also secure the open face dimensions of hoods and record them. He should note on the sketch the type and size of fan, motor, drive, and arrester. This drawing need not be elaborate, or even to scale, and can be taken from the drawing of the system mentioned earlier.

33. **Test holes** should be drilled in each branch. The easiest and cheapest method is to make a 1/16-inch hole, leaving no burrs on the inside of the duct. (See Figure 1.) It is not necessary to cover or plug such a test hole when it is not in use. Sometimes a one-inch length of small copper tubing or even a small brass petcock is fastened permanently over the hole, but these refinements are not necessary. Each hole should be circled with a ring of white or yellow paint, and its

EXHAUST SYSTEM NO. ....		CHECKED BY. ....	DATE. ....
Location. ....		Material being exhausted. ....	
<div style="display: flex; justify-content: space-between;"> <div> <p><b>MOTOR</b> 15 HP 1750 RPM</p> <p><b>ARRESTER</b> TYPE X-12-7B24 2520 SQ. FT. OF CLOTH</p> </div> <div> <p><b>FAN</b> BACKWARD CURVED WHEEL TYPE ABC-18 TO HANDLE 6460 CFM PLUS 10%, OR 7100 CFM AT 8" TP, 2650 RPM.</p> </div> </div>			
Test point	Condition of hood and branch (Battered? Removed? Plugged? Repair?)	Hood Suction (inches water)	
		Originally	Checked
A		2.0	
B		2.1	
C		2.5	
D		2.0	
E		1.9	
F		2.1	
G		2.2	
H		3.0	
J		3.0	
Collector resistance (J)-(H)		3.0	
Material collected since last check .....		Hours of operation .....	Interval between reg. shakings .....
COMMENTS of men, and YOUR comments (use back, if necessary): .....			

Figure 2. Safety director's inspection report.

number or letter painted on the duct—the test points for the whole system being numbered serially. On the sketch, each test hole, with its number, should be marked.

**34. Balancing the system.** Before routine inspections are begun, and even before air samples are taken on a newly installed system, the system must be "balanced," that is, the proper amount of air must be flowing through each hood. Also, in the case of dust exhaust systems, the air velocity in branches and main ducts must be high enough to prevent settling of material, which leads to plugging.

**35.** In the original design, one of two means of balancing a system is used. The more common is to provide blast gates (dampers) in each branch which can be opened or partially closed so that each hood, regardless of whether it is near the fan or at a distance, handles its proper amount of air.

**36.** The other method is to size the diameter of the branches so that more or less air is introduced to serve the same purpose as blast gates. This must be done before the system is installed, since once the duct work is in, the duct diameters are fixed. Figure 2, adapted from Brandt, *Industrial Health Engineering*, shows a balanced system that does not rely

on blast gates.

**37.** Each method has advantages. If blast gates are used, they should be bolted or welded after the system is balanced, to prevent tampering. Blast gates should not be used on a long, complicated system.

**38. A record form** (Figure 2) can be mimeographed for each exhaust system, with a suction pressure reading printed for each test hole. These readings are made immediately after the system has been balanced and dust counts (or other air samples) have been made to show that the air contaminant is under control.

**39. Periodic checks.** Each time the safety engineer makes an inspection, he fills out a report form. He compares the suction pressure readings he finds on recheck with the original readings printed on the report. He makes the following observations and records the results:

- Look at all hoods. See if they are battered, partially removed, missing, or mangled in any way.
- See if the manufacturing process and machines have been altered in any way. Make certain that strong cross drafts are not preventing the air contaminant from entering the hoods.
- Whatever the provision for make-up air, make sure that replacement air has ample opportunity to enter the room.
- Tap the duct at various points with a screwdriver or other metal

object and listen to hear the pipe "ring," showing there is no appreciable settlement of material in it.

The frequency of periodic checks will vary with the type of service performed by the system. Some systems will need checkups weekly; others, monthly.

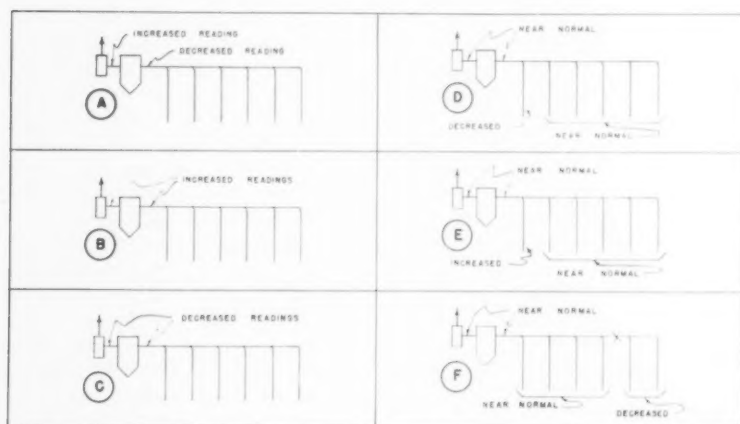
**40. Interpreting suction pressure readings.** If the suction pressure at a test hole differs by more than 10 per cent from the original readings (printed on the report form), the reason can generally be figured out without difficulty. Figure 3 shows how to interpret the U-tube values.

**41. Estimating control velocities or velocity contours.** One of the most important factors is that the control velocity at the source of the contaminant or the face of the booth (where the source is inside the booth) can be quickly measured by a sensitive direct reading instrument such as the velometer or thermo-anemometer. Where the source may cover a considerable area, the maximum and minimum should be indicated.

**42. Source, location, direction, and velocity of make-up air.** In addition to the amount and temperature of the make-up air, its source and method of distribution may be almost as important to successful control of the hazard as the design of the exhaust system itself. Since air blowing out of a duct carries 30 times as far as the same volume of air moving toward a similar exhaust duct (Figure 4), it is very important that the make-up air be diffused in such a way that no disturbing cross currents interfere with proper functioning of the exhaust hood. Frequently, such a disturbance can be anticipated if the essential facts are noted, and smoke tests may confirm its presence.

**43. Maintenance orders.** When the system needs mechanical repairs, such as replacement of worn ducts or hoods, filter cleanout, duct cleanout, fan belt adjustment, etc., the safety engineer should see that work orders are processed to the maintenance department according to the plant's customary procedure.

**44. Record filing.** The safety engineer should keep a file of his inspection reports and reports of air samples.



(A) Dust arrester partially plugged, causing increased resistance. Needs cleaning.

(B) Increased resistance or plugging in header pipe or in branch.

(C) Decreased fan capacity, open cleanout door, or disjointed pipe.

(D) First branch pipe partially plugged somewhere between header and test hole near hood.

(E) First branch pipe partially plugged somewhere between test hole and hood face.

(F) Increased resistance due to plugging in header pipe at "X."

Figure 3. How U-tube readings can be used to show where plugging has occurred. (Courtesy "Tennessee Industrial Hygiene News," 1950.)

45. **Periodic air samples.** If toxic material is handled by the system, in addition to the initial air samples, the industrial hygienist or safety engineer should arrange for periodic samples of the air-borne contaminant in the workroom.

### Inspection by Maintenance Engineer

46. The maintenance engineer should check and lubricate the fan, motor, and drive on schedule, just as he would any other piece of machinery. If the exhaust system has any special interlocking gates, motor-driven dampers, solenoids, or the like, these parts should come under this inspection and should be observed through a cycle to assure that they are operating.

47. He should check the inside of the collector with a flashlight each week, using an access door in the casing. The clean-air side of the collector should be examined to see that there are no accumulations of dust, which would mean that the collector was not functioning properly. He should look in the hoppers to see that they are not overfilled and should check bag collectors for torn or leaky bags.

48. Wet collectors should be checked for plugged spray nozzles, plugged drain pipes, sludge accumulation, and proper water level.

49. Fan speed should be checked monthly with a tachometer. Fan blades and scroll should be examined for wear and dirt accumulation. For this check, a hinged inspection door in the side of the fan casing or in the outlet duct near the fan discharge is necessary.

### Design for Maintenance

50. Good first design will hold down maintenance problems later.

51. **Hoods and ducts.** The hood should be placed as close to the source of contamination as possible. The source should be enclosed if possible, with enough openings left for air to enter. Canopy hoods should be used sparingly. Too often the operator puts his head between the hood and the contaminant so that he may get an even greater exposure than he would if there were no

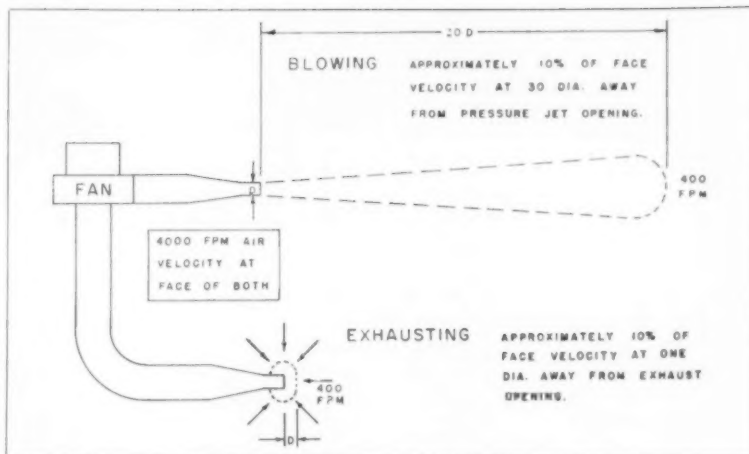


Figure 4. Effect of air blowing OUT of a pipe is felt many feet away, but an exhaust pipe has no effect beyond a few inches from pipe end. Thus it cannot "pick up" material unless pipe and hood are close to the dust source. (Courtesy "Industrial Ventilation—A Manual of Recommended Practice.")

hood. If particles are thrown off by the machine (e.g. a grinder), the hood and the exhaust duct should be placed so that material will be thrown into them. Accessible cleanout doors should be provided in ducts, collector, and fan housing.

52. Sheet metal thick enough to minimize erosion should be used. For corrosive materials, ducts should be lined with resistive coatings or made from suitable corrosion-resistant material. If condensation may be a problem, the need for thermal insulation, "drip" elements, water traps, etc. should be considered. The possibility of a fire hazard, depending upon the material to be handled,\* should also be considered.

53. Construction details are of utmost importance: gradual tapers, baffled hoods, wide-sweep elbows, 30 degree angle of entry to main, etc. Design of a "bal-

anced" system, instead of relying on blast gates, should be considered. Total pressure loss should be calculated carefully, not guessed at. Natural drafts and cross currents of room air that may keep the contaminants from entering the hood should be noted. The hood should be arranged so that it will interfere as little as possible with the worker and still be effective.

54. **Collectors.** The collector should be selected for the substance to be handled, considering such factors as particle size, dust loading, wettability, corrosion, etc. Thought should be given to community air pollution that may result if there is no collector or if too much contaminant is exhausted to the outside.

55. If a bag-type filter is selected:

- Consider size, storage hopper capacity, free-flowing hoppers.
- Provide a permanent outside ladder and catwalk for easy access; with nonflammable dusts, light the inside of the filter housing for ease of inspection.
- Provide a motor-driven shaker rather than a manually-operated one wherever possible.
- Provide time-delay relays and interlocks so that when the fan wheel comes to rest, after the fan motor has been turned off, the shaker motor starts operating and continues for two or three minutes, after which it stops and the fan can then be restarted.

56. **Fan and motor.** The fan should be put on the clean-air

\*Standards for the Installation of Blower and Exhaust Systems for Dust, Stock, and Vapor Removal or Conveying, Pamphlet No. 91, National Fire Protection Association and National Bureau of Fire Underwriters, American Standards Association, Z33.1-1950.

Although the basic purpose of ventilating systems is to serve health and comfort, the use of these standards will result in a system which is also of value from the fire prevention standpoint since it will not transmit smoke and flame through fire walls and throughout the premises. The standards also provide valuable reference with regard to the other components of the system and related fire extinguishing apparatus.

side of the collector. When flammable solid materials or vapors are passed through the system, the provisions of NFPA and NBFU Bulletins No. 91\* should be followed.

57. Fan guards and a test hole for a tachometer to take speed readings of the fan should be provided. Service and inspection doors should be placed in the side of the fan housing, or in ducts at the inlet and outlet of the fan. Resistance of the fan discharge stack should be kept low. A weather cap should be omitted wherever possible.

### Points on Testing

58. Here are some over-all considerations that should be kept in mind in the testing of local exhaust systems.

59. One of the initial steps that may be taken is to ensure that outside vendors or contractors provide a meaningful guarantee of performance for their equipment or system. Then the vendor is made responsible for equipment or systems which do not perform properly.

60. Many a good exhaust system has been overloaded and made ineffective by the addition of hoods in later years. Before hoods are added, it should be ascertained that the present equipment can handle the additional air flow which will be needed without robbing the existing hoods.

61. Make-up air is sometimes a bigger problem than the exhaust system itself. Provision should be made for the air to get into the room to replace the air exhausted. In winter the make-up air may have to be tempered. A room should never be closed up tight and "air bound."

62. The man on the job must know the reason for the exhaust system and must understand how to use it. Better yet, the safety engineer should consult with him before the installation is made, to make sure that hoods, enclosures,

and other parts of the system will interfere as little as possible with his work.

63. For testing exhaust systems visually, smoke tubes are commercially available (or may be made by dipping cotton into titanium tetrachloride). The smoke given off reveals the path of the air currents as they enter a hood. Smoke tubes are a boon to the safety engineer. Using them, he can show the operator how a hood works and thus often convince him how important baffles are, how necessary it is to have the hood close to the dust source, and so on.

64. Two common fallacies need clearing up. First, because people can feel air blowing out of an air line some feet away from the end of the pipe, they think dusty air can be "sucked into" an exhaust hood from several feet away. It cannot. Air can be "sucked" only 1/30 the distance it can be blown (Figure 4). In exhausting, the air velocity at a distance of one diameter from the pipe end is about 10 per cent of the velocity in the pipe; in blowing, this 10 per cent figure is reached 30 diameters from the pipe.

65. Suppose, for example, that a pipe 6 inches in diameter has air traveling through it at a velocity of 4,000 feet per minute. Six inches from the "sucking" end, the air velocity will be 400 feet per minute (hardly detectable by feel); at the blowing end, the 400 fpm velocity is reached some 15 feet from the end of the pipe.

66. A second fallacy is that downdraft ventilation or hoods at floor level are required because organic solvent vapors, like benzene (benzol), trichloroethylene, carbon tetrachloride, and the like, are heavier than air. Heavy gases introduced into air tend to fall before they become mixed with the air. Thus, a vapor train of pure gasoline can form and travel along the floor many feet.

67. However, as vapors are given off from industrial processes, the atmosphere contains not pure vapor, but a mixture of vapor and air. Even air saturated with the vapor remains saturated for a very short time; it soon becomes

diluted with more air because of random convection and wind current in the room.

68. A concentration of 1,000 parts per million of benzene, which is 25 times the maximum allowable health limit, is only 1.0017 times as heavy as air (although pure benzene vapor is three times as heavy as air). That is, the ratio of weight of air to weight of the benzene-air mixture is only 100 to 100.17. There could never be any sinking or stratifying of even this dense (1,000 parts per million) benzene concentration. Consequently, a side or back hood would be just as effective as a downdraft hood.

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Perhaps the best technical reference not only for design of exhaust systems, but also for checking of them, is: *Industrial Ventilation—A Manual of Recommended Practice*, published by the American Conference of Governmental Industrial Hygienists (3rd ed., 1954), available from the Committee on Industrial Ventilation, P. O. Box 453, Lansing, Mich.

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### ACKNOWLEDGMENT

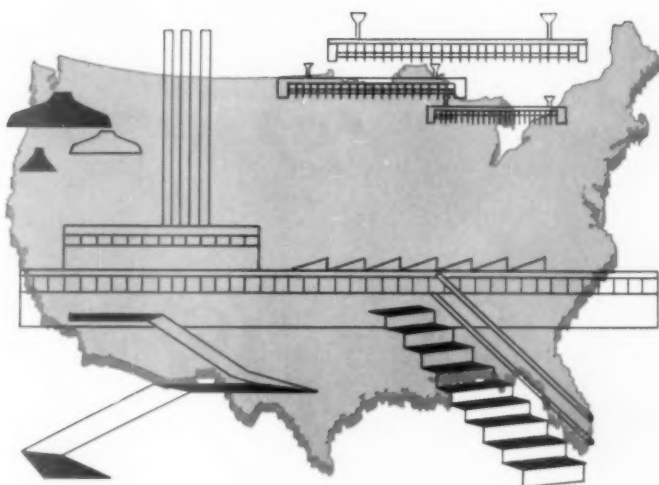
The original draft of this data sheet was prepared by Willis G. Hazard, Owens-Illinois, as a project of the Health Maintenance Committee of the Automotive and Machine Shop Section, National Safety Council. A second draft was prepared by Frank A. Patty, General Motors Corporation, with approval of Mr. Hazard. This publication has been reviewed by members of the National Safety Council and representatives of chapters of the American Society of Safety Engineers. It has been approved for publication by the Publications Committee of the Council's Industrial Conference.

\*Bulletin No. 91, *Blower and Exhaust Systems*, National Fire Protection Association, 60 Batterymarch St., Boston 10. Bulletin No. 91, *Exhaust Systems for Dust, Stock, and Vapor Removal*, National Board of Fire Underwriters, 80 John St., New York.



# PLANT DESIGN and CONSTRUCTION

# 1



## IN THIS SECTION

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**T**HE MODERN PLANT and its work facilities are built around the needs, capacities, and limitations of the worker. There is no indication that the trend toward automation in industry will make this basic principle obsolete.

Industrial engineering has for its objective the efficient use of both equipment and human skills without undue hazard or strain on the worker.

Preplanning an entire plant, or even revisions in buildings, equipment, and processes, can bring a high degree of built-in safety. Such features are conspicuous in most of the newer plants.

All possible faults in working area and equipment should be analyzed in advance. The safety engineer and the industrial hygienist can help by suggesting improvements based on study of conditions and making use of the experience available.

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# PLAN PLANTS FOR PEOPLE

## OPPORTUNITIES FOR IMPROVING CONDITIONS

- New building construction
- Remodeling existing buildings
- Transfers from building to building
- Rearrangement of departments

**BUILDING** a new plant offers many opportunities for features that promote health and safety as well as economy and efficiency in operation. Preplanning will avoid many built-in accident, fire and health hazards.

Location, design and layout of buildings and equipment are important from the standpoints of operation and maintenance, as well as safety and health.

Many companies submit plans to safety and health departments, or to outside consultants. Plans should also be approved by state and municipal authorities. Compliance with codes and regulations in the planning stage may avoid expensive changes in finished buildings.

A new plant is not always practicable but much can be done with most existing buildings. Some 75 per cent of the industrial buildings in the United States are more than 25 years old. According to present standards, they are out of date.

Improvements in layout, ventilation, lighting, sanitary facilities, and materials-handling methods can often be made at moderate cost. If, however, the business has outgrown its quarters and there is no room for expansion, a new plant in a new location may be the only solution.

**Visualizing the finished plant.** In planning the layout, it is possible to get a picture of the plant in miniature by

- Maps and drawings.
- Block templates and two-dimensional templates.
- Scale models, 1/4 inch to the foot. These provide a realistic three-dimensional picture of the plant. Many arrangements can be made. Manufacturing processes can be studied quickly and easily. Operations can be combined or simplified and the sequence changed. Simple scale models can be made in the plant or more elaborate ones can be purchased.

**Controlled conditions.** Developments in lighting and air conditioning have made industry independent of nature for light and climate. These advantages can be obtained

with a plant of conventional design as well as in windowless buildings. Healthful and comfortable working conditions can be provided in either type.

### GENERAL FACTORS

Type of industry is the major factor in plant requirements. Even plants in the same industry may have individual problems that involve special planning. These in-

clude use of flammable, explosive, or toxic materials or unusual problems of materials handling and storage.

**The site.** Location is often dictated by manufacturing processes. Fire and explosion hazards, of course, demand isolation. Smoke, odors, fumes, dust, and noise are other reasons for banning an industry from some neighborhoods.

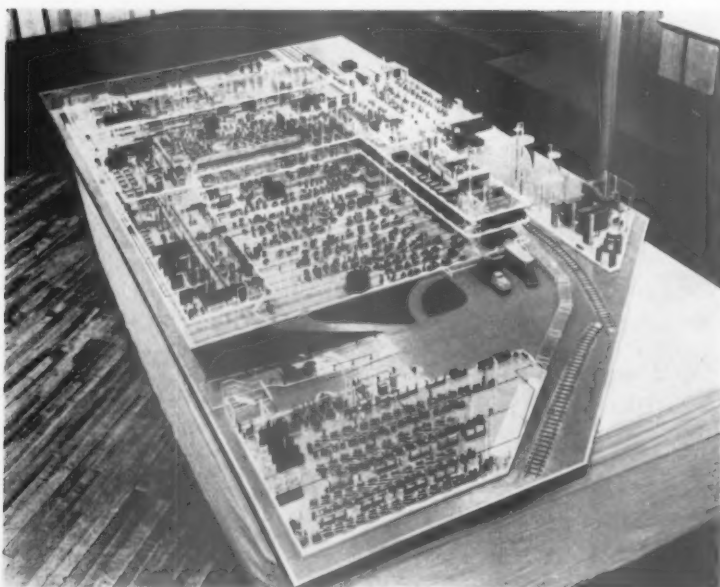
Other factors in choosing a site are:

- Sources of raw material.
- Proximity to markets.
- Local labor supply.
- Room for expansion.
- Transportation for raw materials and finished products.

Adequate outdoor storage should be provided. Where flammable or explosive materials are stored, specified minimum distances must be

### CHECK THESE IN THE PLANNING STAGE

1. Site
  2. Transportation facilities:
    - Docks and wharves
    - Railroad
    - Highways and plant roadways
    - Mass transportation for employees
  3. Exits and other wall openings
  4. Walkways: floors, stairs, ramps, platforms
  5. Storage facilities:
    - Flammable and explosive materials
    - Toxic substances
    - Raw materials
    - Finished products
    - Yard storage
  6. Electric wiring and installation
  7. Illumination
  8. Materials handling equipment:
    - Cranes
    - Conveyors
    - Industrial trucks—power and hand
  9. Elevators
  10. Boilers and other pressure equipment
  11. Ventilation, dust control, air conditioning
  12. Fire protection
  13. Noise and vibration control
  14. Health and Safety:
    - Water—for drinking and sanitary uses
    - Waste disposal
    - Medical and first aid service
    - Personal protective equipment—distribution and repair facilities
  15. Personal service facilities:
    - Parking
    - Washrooms and lockers
    - Food service
    - Employment offices
    - Training programs
- These subjects are discussed in greater detail in other sections of this issue.



Scale models provide a plant on a table top to aid in planning layout, flow of materials, and other details. Models may be home-made or purchased.

maintained between storage areas and other property.

Fire protection codes also specify minimum distances between buildings of various types, sizes, and occupancies.

Coal and other bulky materials require considerable storage space. So does disposal of solid wastes in some industries.

**Employee transportation.** Industry's continued movement to outlying locations brings transportation problems, particularly where transit service is inadequate. The problem is particularly troublesome for night shifts. Tardiness, absenteeism, and labor turnover increase in proportion to the difficulty of getting to and from work.

For many employees, the car pool is the answer. Some companies operate private busses, either free or at a low fare.

The effect of a new plant on traffic and parking conditions should always be considered. Many an industry otherwise unobjectionable as a neighbor may be unwelcome in a built-up neighborhood because of the congestion and hazard created.

**Topography.** Ground may be high or low, level or sloping, dry, swampy, or undermined. All of these factors must be considered in the plans. Normal drainage and the possibility of floods or washouts during heavy rains must also be considered.

On ground where flooding is possible, multi-story buildings have ad-

vantages. Upper floors provide a place to which valuable equipment and products may be moved.

**Waste disposal.** Waste and sanitary sewer location is determined chiefly by location of buildings, lay of the land, and maintenance needs. Sufficient manholes or other openings for maintenance should be planned.

Sewers should not be located where leakage might contaminate drinking water sources. In some instances it may be necessary to treat waste material before running it into streams or otherwise disposing of it. In other instances it may be necessary to install special sewerage systems.

Federal as well as state and municipal laws may govern waste disposal.

**Climate.** In colder regions there are problems of ice and snow removal. Keeping the plant warm while removing air contaminants may make ventilation complicated and expensive.

In warmer and drier climates some material may be stored outdoors; in others, covered storage may be necessary.

Roof loads of ice and snow and strong winds also affect building design. Where storms of hurricane intensity are frequent, roof anchorage is important. Data regarding losses through windstorms and lightning in various sections of the

country are available from insurance companies.

Prevailing winds also affect design and location of smokestacks.

**Protective lighting** safeguards life and property, particularly in times of emergency. Fences high enough and strong enough to deter trespassers are also important in plant protection.

**Entering and leaving the plant.** Separate entrances and exits should be provided for pedestrians, vehicular traffic and railroad traffic. Entrance and exit gates should be not less than 35 feet from property line structures which might obscure vision. Gates for vehicular traffic should be arranged so that drivers will have a clear view of cross traffic when leaving the premises.

Passenger loading and unloading facilities should be arranged to avoid traffic hazards and reduce the time and effort required to reach the plant. A plant on a main highway should provide space where buses can at least pull off to the side for loading and unloading.

Where highway traffic is heavy and a large number of employees must be handled, an underpass or

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# LIGHT FOR SAFER WORK

**ADEQUATE LIGHT** for modern needs, while only one of electricity's contributions to progress, ranks high among its benefits. It is an aid to seeing efficiency and better work as well as to morale and safety.

The proportion of industrial accidents in which poor lighting is a contributing cause has been estimated at 15 to 25 per cent.

Industrial processes have become more complex with much precision work which makes exacting demands on eyesight. Labor costs and investment in plant and machinery per worker are steadily increasing. Research in lighting and the development of efficient and economical light sources have made our industrial growth possible.

Artificial lighting is no longer regarded as supplementary to daylight. It has become the major source for industry because natural light is not dependable, particularly in winter. Without present high levels of dependable light, continuous shift operation would not be practicable.

**Lighting essentials.** To enable the

eye to function effectively the lighting system must:

- Provide adequate brightness at the work surface. The worker must see easily, accurately and rapidly without eyestrain and undue fatigue.
- Minimize contrast, glare, and shadows.
- Supply light of right quality for quick and accurate judging of details.
- Contribute a pleasing atmosphere to the workplace.

**Seeing Zones.** There are two zones in the work room to be considered in providing light for seeing.

The task zone is the job and its immediate surroundings. Work should be lighted adequately, shadows eliminated or diffused, and reflections from surrounding surfaces avoided.

The other zone is the rest of the room. A person looking up from work should not face glare from lighting fixtures or a bright wall or ceiling. Adapting eyes from light to darkness several hundred times a day is fatiguing.

If the surrounding area has a

brightness at least one-third that of the task, visual conditions are reasonably good. Surroundings should never be brighter than the work zone.

Glare can be reduced by higher illumination levels throughout the room, also by finishing surfaces in colors with high light reflectance value. Light colors on ceilings, walls, floors, and machines reflect a high percentage of light which reduces contrast between adjoining surfaces.

Directional and shadow effects are often desirable in general lighting. They help to accentuate the depth and form of solid objects but harsh contrasts should be avoided. Clearly defined shadows, not too deep, are helpful in some operations, such as textile inspection.

Recommended levels of light for various operations will be found in many reference books. One of the most comprehensive works on lighting is the *IES Lighting Handbook*. Much useful information is also contained in manuals published by manufacturers of lamps and fixtures.

Existing levels are determined from readings with a light meter at the spot where light is needed. This device gives a direct reading of the number of footcandles.

**General lighting.** The minimum amount of light required for an area is termed general lighting. This has been defined as a uniform distribution of the light to produce approximately equivalent seeing conditions throughout an interior.

Localized general lighting sources are usually arranged 10 feet or more above the work. They should prevent too great a contrast in brightness between the more highly lighted work area and the adjacent areas, provide sufficient light for general safety and protection, and enough light for ordinary visual needs.

For general overhead lighting, levels range from 5 footcandles for inactive storage and passageways to 50 footcandles for more exacting work.

Where higher levels are needed, supplementary units provide the necessary light more economically.

To insure adequate levels, even where conditions are favorable, the system should be designed to give initially at least 25 per cent more light than the recommended minimum.

Where dirt collects rapidly and systematic maintenance is not provided, the initial value should be 50 per cent above the minimum.

**Supplementary lighting.** Some difficult seeing tasks require more



Thirty-five foot candles of light, exhaust hoods on linotypes, a thermostatically controlled ventilating system are found in the composing room. Wood block floors are satisfactory for many types of industry. (The Austin Co.)

## REFLECTANCE VALUES

	Reflectance Factor (%)
Ceilings .....	80
Walls .....	60
Desks and bench tops .....	35
Machines and equipment ....	25 to 30
Floors...not less than .....	15

light than can be obtained economically by overhead general lighting. For such work supplementary fixtures are used.

Two types of equipment meet most needs. One uses small concentrating projectors to increase the light on the work and provide directional quality.

Another type has large area with low brightness, such as fluorescent desk or bench lamps. These fixtures can provide either general lighting for a small area or extra light for critical work, such as inspection.

Supplementary lamps should be shielded, louvered or mounted to prevent glare.

## ARTIFICIAL LIGHT SOURCES

Three common sources are: (1) Filament lamps; (2) Fluorescent lamps; (3) Mercury vapor lamps.

**Filament (incandescent)** lamps are available up to 1500 watts for general and special service. There is a type for almost every industrial, public and domestic need.

For many purposes low first cost and convenience offset the higher efficiency of other light sources. No auxiliary equipment is needed; merely a standard socket and available current.

More light without increased current consumption is offered by the new coiled-coil filament lamps. These are now available in 750- and 1000-watt sizes. Smaller sizes will be made during the next few years.

Another development in filament lamps is the Fluomeric lamp, said to combine the best features of incandescent, fluorescent and mercury-vapor lamps. It produces a natural sunlight glow and is bright enough for high bay installations. No transformer is needed.

**Fluorescent lamps** have high efficiency and long life. Heat output is low—about one-fourth that of filament lamps with comparable light output. Low brightness and good light distribution make possible installations which provide adequate illumination of good quality.

For a given lighting level more fluorescent units are needed than for

incandescent or mercury systems.

Fluorescent lighting is particularly suited for large areas. Fixtures should not be mounted too low, for high mounting a fluorescent system is sometimes more economical than either mercury or incandescent lamps.

In spite of low surface brightness, bare fluorescent lamps are too bright for eye comfort. Louvers or translucent panels improve diffusion and reduce glare.

**Mercury vapor** discharge lamps are highly efficient light producers, with high output per watt, long life and low operating and maintenance costs. Small size and high intensity provide high lighting levels with a relatively small number of units.

Mercury lamps are available in a wide range of sizes and wattages. They require auxiliary equipment which makes the cost high. After a power interruption they take five to eight minutes to restart. To avoid the hazard of temporary darkness a combination mercury-filament system may be installed.

**High bay mounting.** Where areas are large and maintenance difficult, mercury lamps offer definite advantages.

For rough work, as in steel mills and foundries, mercury lamps may be used alone. Where color discrimination is important, alternate

## BRIGHTNESS RATIOS

- 5 to 1 Between tasks and adjacent surroundings.
- 20 to 1 Between tasks and more remote surfaces.
- 40 to 1 Between luminaires (or sky) and surfaces adjacent to them.
- 80 to 1 Anywhere within the environment of the worker.

American Standard Practice for Industrial Lighting, American Standards Association. NOTE: These ratios are recommended as maximums; reductions are generally beneficial. The color and reflections of walls, ceiling and floor, as well as of equipment, determines the brightness pattern.

fixtures of mercury and incandescent lamps are used. A new color-improved type gives the same effect as when equal wattages of mercury and filament lamps are combined.

**Reflectors.** Many types of reflectors are available to conserve light and prevent glare. In choosing the lighting unit consider:

- Distribution of light on the job.
- Efficiency of light output.
- Sturdiness of construction.
- Adaptability if more light is needed.
- Economy of cleaning and replacement.

Lamps with a reflecting surface inside the bulb are more expensive but have important advantages where dust, fumes, and other conditions make maintenance difficult or costly. The reflecting surface is sealed against deterioration and light is diffused through the bottom of the lamp.

Reflectorized lamps are available in both filament and mercury vapor types.

## NATURAL LIGHT

A plant may be designed to make full use of daylight or to depend largely or wholly on artificial light. The problem is primarily one of economics, taking into consideration the number of sunny days and the increased cost of construction to bring daylight into the plant.

Sawtooth roofs, oriented to avoid direct sunlight, offer the most effective way of daylighting a one-story building. Extra cost as compared with a flat roof, may amount to 20 per cent or more.

Side windows alone are inadequate for lighting extensive areas. Skylights are rather expensive to keep in repair and clean. They have obvious disadvantages in regions where hailstorms are frequent.

**Refracting and diffusing** glass are helpful in subduing glare. They improve distribution of light, particularly to distant parts of the room.

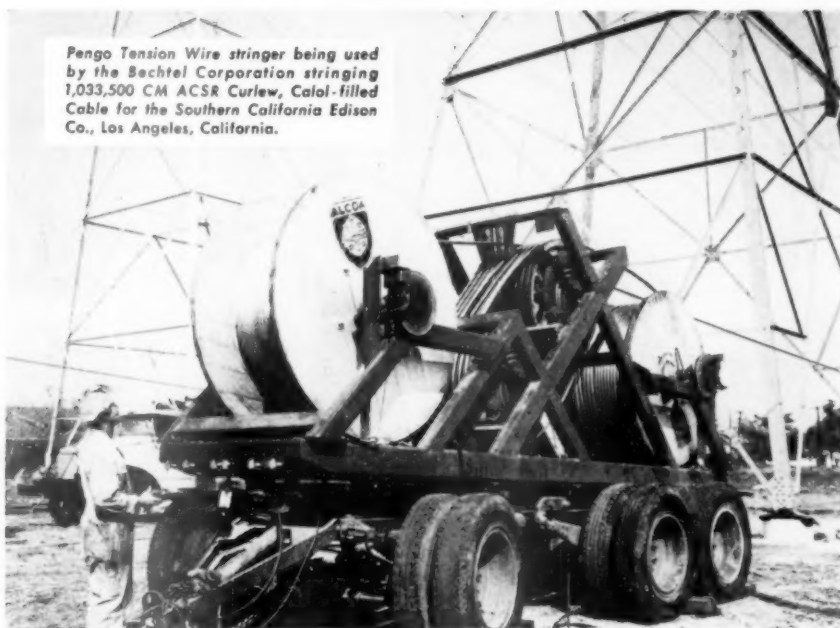
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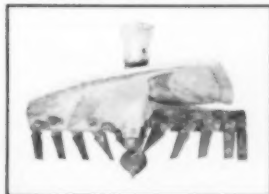
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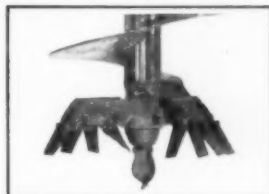
### Other PENGU Products include:



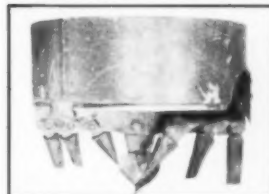
24 inch Heavy Duty Flight Auger



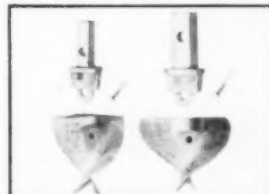
Double-Helix Heavy Duty Auger



Offset Boring Head



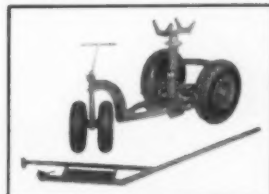
Bucket Auger



Screw Bit for Small Diameter Holes



Pulling Eye



Pole and Transformer Chariot

# KNOW YOUR FLOORS

It's so easy to pick the wrong type

**NO ONE TYPE** of floor will answer every need. There is a "best" floor for every occupancy, though the choice may be a compromise. Here are some hints for new floors in new plants or replacing old ones:

**1. Divide the plant into areas.** List the kind of service each will get. If the floor is subjected to more than one type of use, add another classification.

Consider aisles, storage areas, work places, heavy machining areas, loading docks, assembly areas, corridors, offices, rest rooms, cafeterias, etc.

**2. Service requirements.** Here is the type of information needed for every department:

**Size of area.** This will help to figure floor costs, which often decides the choice of material.

**Kind of traffic.** What is type and frequency? Note aisle widths and clearances. Is traffic chiefly pedestrian or vehicular? Resistance to slipping is important for pedestrians.

**Load requirements.** Include type of load—standing, impact, rolling, sliding, vibrating, etc.—also weight and concentration.

**Exposure to water.** Standing water, humidity, condensation, temperature of water are points to consider.

**Extremes of temperature.** Some materials become brittle at low temperatures, others weaken when exposed to heat.

**Weather exposure.** Some materials may be used indoors or out. Some are adversely affected by sun, freezing, snow, or rain.

**Fire and explosion hazards.** Are there flammable dusts or vapors that could be ignited by a spark? Are plant processes a fire hazard?

**Chemical exposure.** Acids, alkalis, grease, and other specific chemicals will ruin some types of floors.

**Product cleanliness.** Floors that dust or collect dirt are unsatisfactory for food processing or precision machining.

**Appearance.** Looks are a minor consideration from the standpoint of safety but they can't be ignored.

**Cleaning.** Some floors can stand cleaning with strong alkalis and steam. Others must be treated gently. Will the use of the area demand vigorous cleaning methods?

**3. Sources of information.** Few plant men have the necessary know-

how to handle all industrial floor problems. There are, however, many sources of detailed information, including:

National Bureau of Standards.

Floor associations—Asphalt Institute, Asphalt Tile Institute, Maple Flooring Manufacturers Assn., Oxychloride Cement Assn., Portland Cement Assn., and Tile Manufacturers Assn.

Build up a file of manufacturers' catalogs.

Consult a floor expert, architect, or engineer.

## GENERAL REQUIREMENTS

Eventual choice of a floor will be based on one or more of these qualities:

**1. Strength**—Sufficient to carry four times the expected static load or six times the moving load.

**2. Resistance to slipping**—Not slippery nor likely to become slippery through wear or contact with other materials.

**3. Durability**—Must stand up under normal traffic and wear evenly without developing holes and splinters.

**4. Maintenance**—Easy and economical to keep sanitary and in repair.

**5. Fire resistance**—Important in most industrial property.

**6. Comfort**—Resilience and low heat conductivity reduce fatigue.

**7. Quietness**—Another aid to reducing fatigue.

**8. Initial cost**—Often the deciding factor.

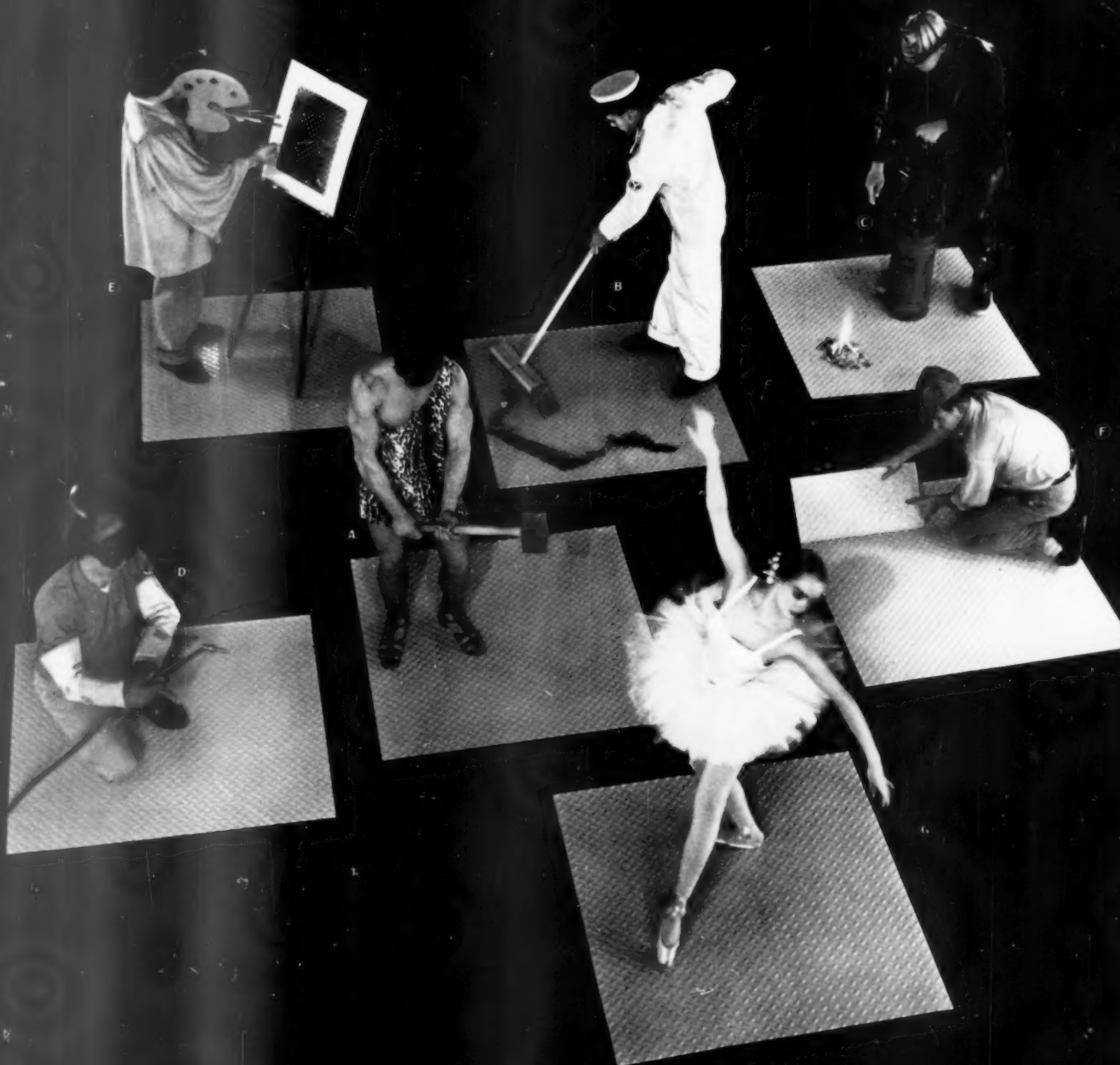
—To page 27

COMMON FLOORING MATERIALS FOR INDUSTRIAL USES

AREA	Concrete	Asphalt hot mastic	Asphalt emulsion	Wood block	Wood plank	Asphalt tile*	Greaseproof asphalt tile	Resin binder mastic	Linoleum*	Terrazzo	Rubber tile	Ceramic tile*	Vinyl tile	Metal plates	Grating
Floors on grade .....	x		x	x	x	x							x		
Floors below grade .....	x					x	x								
Suspended floors .....			x		x	x	x	x	x	x	x	x			x
Driveways .....	x	x	x												
Ramps and loading docks .....	x		x	x	x										
Manufacturing areas .....	x		x	x				x							
Warehouses .....	x		x	x											
Stair treads .....	x					x			x	x			x	x	x
Offices .....						x			x		x		x		
Laboratories .....						x	x		x	x	x		x		
Cafeterias .....							x		x				x		
Washrooms .....	x					x				x	x	x	x		
Food processing .....	x						x					x			
Corridors .....	x								x	x			x		
Platforms, catwalks .....					x									x	x

\* Also available in conductive grades for explosion-hazardous areas

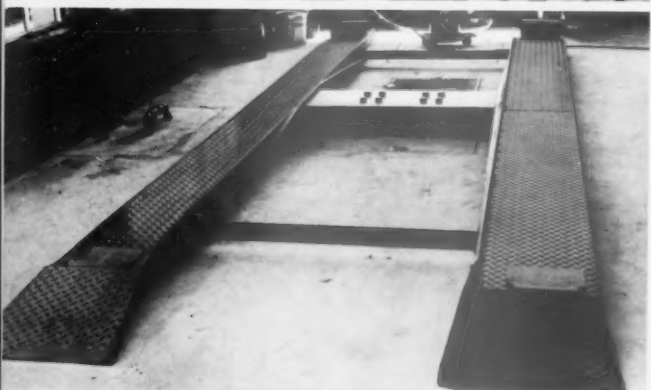
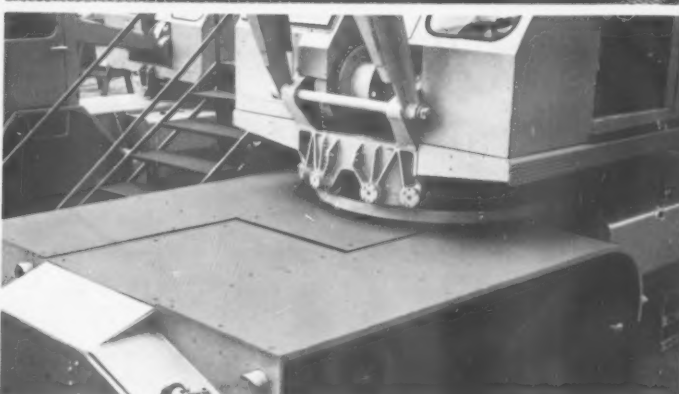
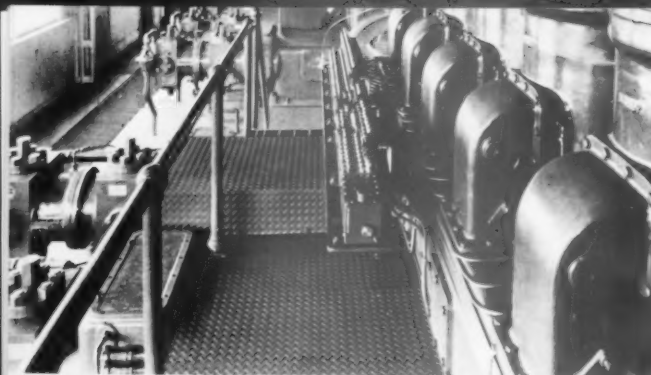




**"THIS FLOORING MATERIAL HAS EVERYTHING."**

That's what users of Inland 4-WAY SAFETY PLATE say about this rugged, steel flooring material. No other material offers such a combination of advantages. For example, it's (A) STRONG and DURABLE. Not just a safety flooring surface material, but a steel plate that can be used as a structural member. (B) EASY TO KEEP CLEAN. Smooth, non-porous surface with no dirt traps. (C) FIRE RESISTANT. Can be used

in applications where ordinary flooring is unsafe. (D) EASY TO FABRICATE. Is readily cut, sheared, punched, welded and formed with conventional equipment. (E) ATTRACTIVE. Pleasing over-all pattern design provides neat, modern appearance. (F) EASY TO APPLY. Lug design makes pieces easy to match. (G) SLIP-RESISTANT. Unique raised-lug pattern gives traction to feet and wheels. For more facts on using Inland 4-WAY SAFETY PLATE, please turn the page.



Manufacturers from coast to coast and in every type of business are discovering how versatile Inland 4-WAY SAFETY PLATE can answer their flooring problems in every case where safety, strength, fire resistance, long life and ease of maintenance are required. They're learning how surfaces covered with 4-WAY SAFETY PLATE pay off in saved man-hours, better fire protection, cleaner plants. They're

finding that this same versatile material can add an important (and saleable!) safety feature to many of their products.

The next time you walk through your plant, keep your eyes open for places where rugged, economical Inland 4-WAY SAFETY PLATE can be put to work to help you increase the efficiency of your operation and the saleability of your products. Ask your steel distributor about 4-WAY!\*

Send today for your free copy of "18 Useful Ideas", a booklet packed with helpful plant applications for 4-WAY SAFETY PLATE. Address your request to Dick Prendergast, Room 1262.

## INLAND STEEL COMPANY

38 South Dearborn Street • Chicago 3, Illinois  
Sales Offices: Chicago • Milwaukee • St. Paul • Davenport  
St. Louis • Kansas City • Indianapolis • Detroit • New York

\*Reg. Trade Mark



## Floors

—From page 24

### FLOORING MATERIALS

Each material has its limitations. Some with good durability and resistance to slipping may be too expensive for general use. These are often usable for limited special areas where a sure footing or resistance to chemical or abrasive action is important.

The accompanying table will serve as a guide in selecting flooring. It does not include all types of flooring or all problems concerning their use.

Smooth, hard surfaces, like concrete, are susceptible to chipping and abrasion. Trucks with steel wheels and heavy falling objects are destructive to the surface. Rubber tires are easier on floors as well as on the ears.

Concrete is suitable for a wide variety of interior and exterior uses. It is excellent for damp locations, but does not withstand acids. The floor should be graded to avoid spots where liquids can collect.

Drains with strainers are needed where the surface is cleaned by

flushing or where there is danger of flooding.

A durable roughened surface, resistant to cracking and dusting, can be obtained by a wood float finish to a mixture of pea gravel, sand and cement. Too smooth a surface is slippery when wet and is actually more tiring to the feet than a rougher one.

Hardening compounds or sealers can be applied to prevent dusting.

Concrete floors can be made conductive and non-sparking with surfacing compounds containing non-ferrous metallic aggregate. This treatment also makes the floor more wear resistant.

For repairing holes and cracks some compounds are superior to concrete. Patching with concrete, even when well done, may crack out under heavy loads.

For painting, a general purpose floor enamel may be used but finishes prepared especially for concrete are more durable. New concrete should be treated with zinc sulphate solution to neutralize alkalinity.

Concrete provides a rigid and substantial base for resilient types of flooring.



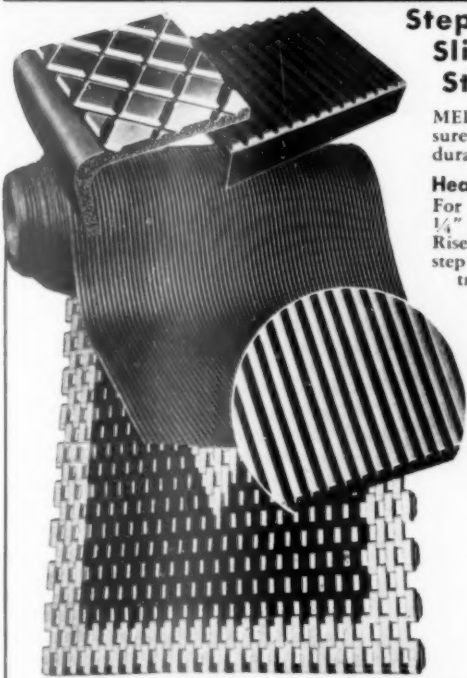
Many types of compounds are available for patching or resurfacing floors.

**Resilient non-slip mats** are an aid to comfort where employees must stand in one position for long periods. Those who move about in their work are less likely to complain about floors being cold or hard. Footwear also has a bearing on comfort.

**Asphalt** (hot mastic) is non-dusting, elastic, odorless, and easily repaired. Problems of application restrict its use indoors.

Asphalt is resistant to weather and moisture but is affected by oils, solvents, acids and alkalis. It stands

# Ever Think About Stair Accidents?



## Steps, Aisles, Ramps, Working Areas Will Be Slip-Proof With These Compounded Rubber Step Treads, Runners, Mats . . .

MELFLEX Frictioned Rubber compound for step, aisle and floor covering gives sure-grip SAFETY under all conditions. Resilience with lasting, economical durability reduces noise and assures surface that meets hardest traffic wear.

### Heavy Duty Molded Treads — Grid Pattern or Transit Type . . .

For curved or square nosed steps, molded to fit. Black, diamond grid pattern 1/4" thick. Marbleized colors in blue, brown, green, terra-cotta, gray — 3/8" thick. Riser strips available in same colors. Black transit type treads molded to fit over step edge for extra heavy duty service. Outside or inside installation. These treads applied to any type surface — wood, metal, concrete, stone, tile — with Melastic cement for permanence. No binding strips necessary.

### Mel-Isle Ribbed Runner — Black or in Color . . .

Deep ribbed, self-cleaning surface for extra hard traffic and continuous SAFETY . . . Black up to 3/8" thick and in various widths up to 40". Marbleized colors same as in treads, above, 1/8" or 3/8" thick. We supply all flooring material and treads ready trimmed to your specifications. You have no cutting or waste.

**MATS** — Neoprene, Vinyl, Frictioned Rubber, Plain Rubber . . . Link mats of all types for every need . . . Neoprene and vinyl links to resist oil, grease, gasoline, acids . . . Frictioned rubber for long service, low cost . . . Multi-colored rubber links for attractive entrance mats.

### MELFLEX PRODUCTS COMPANY, Inc.

410 South Broadway, Akron, Ohio

Send catalog and price information on SAFETY products.

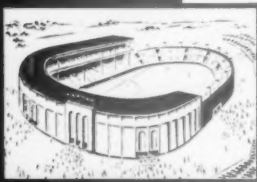
Name \_\_\_\_\_

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City \_\_\_\_\_

State \_\_\_\_\_

SEND THIS COUPON for catalog and prices



## Stop slips on floors by coating with **FLINTDEK**\*

**CROWDS ARE SAFER WALKING** through grandstands, stadia, auditoriums, and other areas ... when the ramps, aisles, steps and washrooms have been coated with anti-slip Flintdek.

You can trowel it on ... or spray for most economical application. And dress up the floors at the same time ... with five attractive colors to choose from.

Flintdek, properly applied, will not chip, crack or peel ... is used over steel and concrete. It is resistant to oil, gasoline, alcohol, cleaning agents and water.

Flintdek is classified and listed as an anti-slip flooring surface by Underwriters Laboratories, Inc.

May we send you application data? \*Reg. U.S. Pat. Off.

### THE FLINTKOTE COMPANY

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In London, England:

Industrial Asphalts Company, Ltd.



up well under traffic but ordinary grades soften at temperatures above 95 F.

Harder grades of asphalt remain firm up to 158 F. There are also acid-resisting grades.

**Asphalt emulsion**, sold under various trade names, is made into a mortar with sand and cement and laid cold about one-half inch thick. It is used extensively for patching. On a substantial wood base it will carry moderate traffic; with a concrete base it will take heavy trucking. The surface is somewhat harder than the hot mastic type. Both types are affected by oils and solvents.

**Mastic flooring** of other types usually has a resin binder. The materials are generally resistant to oils, solvents and alkalis, but the manufacturer should be consulted about the exposure. These materials are relatively high in price and are used principally for patching and for resurfacing limited areas.

**Ceramic tile** is frequently used where oils, acids or alkalis are present and in food product plants where floors must be washed frequently.

**Asphalt tile** is suitable for offices, stores, light manufacturing areas, and floors below grade. Several grades are available: industrial, standard, greaseproof, conductive, and greaseproof-conductive. It is moisture resistant but susceptible to indentation. It is lower in price than most types of flooring. It is non-slippery in its normal state and can be kept in good condition with non-slip floor finishes. Solvent waxes should not be used.

**Linoleum** is quiet and comfortable underfoot. It is used in office, laboratories and workrooms, where cleanliness is important. Heavy gauge linoleum will withstand loads up to 75 lbs. psi. without permanent marking. Since highly polished linoleum is extremely slippery, the choice of a finish is important.

**Rubber** is resilient and has high dielectric strength which is undesirable where static electricity is a problem. Conductive types of rubber flooring are suitable for such locations. Abrasive rubber flooring is useful for stair treads, elevator sills, thresholds.

**Vinyl plastic**, usually in tile form, is durable and decorative but relatively high in price. It resists acids, alkalis and most organic solvents. The surface is nonporous and easy to keep clean.

**DIRECTS  
LIGHT  
AS YOU  
WANT IT!**

## FOSTORIA New 20th Anniversary **LOCALITES**

**FLEXIBILITY OF A  
THOUSAND POSITIONS**



**MODEL  
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**\$803  
Each**

In Std. Pkg. of 4  
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WRITE for complete  
catalog of Localite  
Models for every in-  
dustrial use.

**NEW Universal Arm Joints**—Bend 135°. Large frictional triple disc bearing surface. Smooth, easy movement. Instantly adjustable by hand to direct light exactly as needed.

**NEW Collar Disc Joints**—Rotate 180°. Combination of 135° bend joints and 180° rotating joints provides amazing articulation for positioning reflector.

**NEW Reflector**—Bell shape with 6 3/4" orifice. Accommodates 100 watt A-21 lamp. Available with lens.

**NEW Base**—12" pedestal with adjustable clamp clip to hold arm.

**NEW Wiring**—Keyless porcelain socket and separate toggle switch. 8 ft. SPT-2 18/2 heavy duty plastic rip cord with molded plug.

**NEW Finish**—Semi-gloss. Vista Green baked enamel. Reflector interior, high temperature white.

**FINEST  
"SEEING  
TOOL"  
EVER  
DESIGNED**



**THE FOSTORIA PRESSED STEEL  
CORPORATION, Fostoria, Ohio**  
Localites are available through  
wholesalers everywhere.



**Wood block** is used for heavy duty general purpose floors. A floor of this type is durable, relatively noiseless and comfortable under foot and does not become slippery. Blocks laid on a smooth, rigid base will stand up under heavy trucking and are not likely to crack. Blocks should be impregnated with creosote for resistance to dampness.

Blocks should be set in high melting point pitch. Ordinary pitch or tar filler may stick to wheels and shoes in hot weather.

**Wood plank.** Hard, close-grained wood provides a floor that is comfortable and reasonably durable under foot traffic. Under moist conditions, boards have a tendency to swell and buckle. A heavy subfloor makes the surface flooring more resistant to moisture and traffic. Under heavy wheel traffic, boards may loosen or break frequently, causing hazardous conditions and excessive maintenance. A penetrating floor seal protects the surface and makes cleaning easier.

**Fabric surfacing.** Heavy fabric coated with mineral grains is used indoors and out for stair treads, ramps and around machines. The material can be applied to concrete, metal or wood. It is backed with adhesive which adheres to the surface under pressure. It wears well and is resistant to water, oil and weather.

**Steel plates** are serviceable for platforms, stair treads, floors, hatchways. They wear well and are easily cleaned but are highly conductive of heat and are noisy.

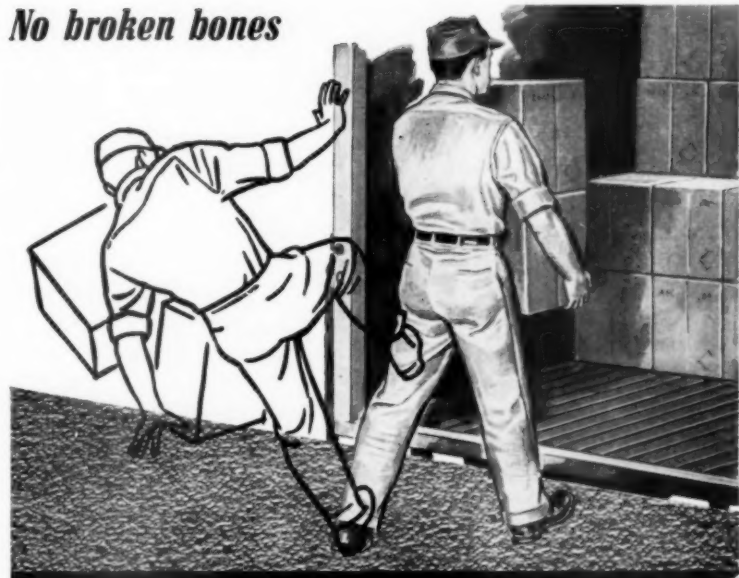
Plates with checkered extruded patterns offer good traction and resistance to slipping. When worn, plates can be roughened with a welding torch.

Steel plates are also used over ducts which carry electric circuits or pipe lines. They are easily assembled and can be removed for servicing equipment underneath.

**Magnesite** is suitable for light traffic. It must be laid on a rigid base. It should not be used where there is excessive moisture or hydrostatic pressure, as in basements. It is resistant to oil. A coating of bituminous paint should protect metal surfaces in contact with magnesite since it corrodes some metals.

**Terrazzo** floors are durable and easily maintained. The mixture can include abrasive aggregates to provide a non-slip surface. Sealers make it impervious to most acids.

## No broken bones



## The Accident did NOT happen thanks to A.W. ALGRIP World's only abrasive rolled steel floor plate

No slip!

Except in accident and insurance rates!

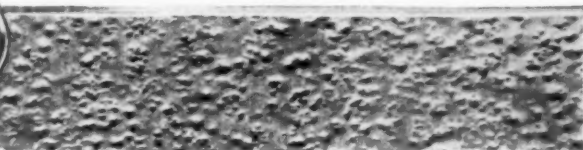
Because neither oil, grease nor water—on flat or inclined surfaces—can reduce the powerful friction grip of ALGRIP's uniformly embedded abrasive particles.

ALGRIP's abrasive is rolled in—not coated—to a controlled depth as an integral part of the steel plate. Wear and tear merely expose more abrasive. ALGRIP, made by a patented process, fabricates easily—maintenance is practically nil.

Make a test installation in your worst slipping area. Watch accident rates go down.

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ABRASIVE ROLLED  
STEEL FLOOR PLATE



ALGRIP—approved for safety by Underwriters' Laboratories.

**ALAN WOOD STEEL COMPANY**  
Censhochocken, Pa.

Please send A.W. ALGRIP Booklet AL-26

Name

Title

Company

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City  Zone  State



Other products: A.W. SUPER-DIAMOND Rolled Steel Floor Plate—Plates—Sheets—Strip—(Alloy and Special Grades)

Where there is excessive foot traffic, as in building lobbies, rubber mats reduce slipping hazards and protect the surface.

**Lead** is used for floors exposed to acids and as insets or mats for secure footing in operation of woodworking machines or other places where the results of a slip and fall would be unusually serious. Lead is conductive of heat, nonsparking and quiet.

**Zinc** is non-sparking and sometimes used in such locations as compounding rooms where fire and explosion hazards exist. Zinc is attacked more readily by acids and alkali.

**Cork tile** is quiet and resilient and has high anti-slip and insulating ratings. In dry locations it stands up well under light traffic. It is expensive for most industrial uses but it will reduce damage to dropped tools and materials.

## STAIRS, RAMPS, FIXED LADDERS

Permanent passageways between levels

**IN PLANTS** where operations are conducted on more than one level, stairs and ramps carry a heavy volume of traffic. Fixed ladders are used for access to locations where stairways would not be practicable.

Their use is governed by these conditions:

**Stairs:** Where grade is between 20 and 50 degrees from the horizontal.

**Ramps:** Should slope as little as possible; 15 degrees is recommended maximum.

**Fixed ladders:** For grades over 50 degrees.

### STAIRS

Long stair flights should be avoided. Landings every tenth or twelfth tread are recommended.

For grades between seven and 20 degrees, a combination of stairs and level landings may be used.

Adequate light should be provided for stairways and burned-out lamps replaced promptly.

**Treads and risers.** Ratio between depth of stair treads and height of risers determines the angle or pitch of the stairs, which should be between 30 and 35 degrees from the horizontal. Tread width and riser height must be constant for each flight.

Windings should be avoided if possible. Wedge-shape treads make it more difficult to ascend or descend safely.

**Abrasive metal plates** are used for thresholds, elevator sills, stair treads and other locations where appearance and a durable, non-slip surface are essential. Plates with abrasive particles incorporated in the surface are available in both steel and non-ferrous metals.

**Conductive floors** of several types are important in the control of static electricity where explosives are manufactured or where flammable gases, dusts and vapors may form explosive mixtures. Conductive floors ground static electricity and stray currents.

**Gratings** are used for interior and exterior platforms, catwalks, stair treads, fire escapes, and over floor openings. They offer a sure footing and are practically self-cleaning.

Gratings in numerous designs are made in steel. Where light weight is essential, aluminum grating is available.

**Treads** must be wide enough that, in descending the stairs, the ball of the foot does not project beyond the nosing and the heel does not strike against the riser above.

**Building Exits Code, A9.1**, specifies that treads of new stairs shall not be less than 9½ inches, exclusive of nosing; also that no tread of less than 6 inches, exclusive of nosing, shall be permitted.

Stairs subjected to severe use should have treads with a durable non-slip surface. Materials used for original installation or repairs include abrasive metal, steel with extruded patterns, grating, plastic compounds, rubber and fabric with abrasive surface.

**Risers** should not be more than eight inches nor less than five inches in height. Greater or less height will cause one to take an unnatural stride which may result in a serious fall.

**Railings and handrails.** ASA Code *Floor and Wall Openings, Railings and Toe Boards, A-12*, requires that every flight of stairs having four or more risers shall be equipped with standard stair railings or standard handrail as specified.

Spiral stairways are installed where there is not enough space for conventional stairways. Both types of stairs can be installed by plant personnel from standardized metal

parts obtainable with a variety of slip-resistant treads.

### RAMPS

**Ramps** facilitate wheeled traffic between levels. For foot traffic they are preferable to stairways when it is practicable to use them. They should be built to the least slope possible. Maximum recommended slope is 15 degrees. A rise of more than one foot in 10 is prohibited in some states.

For wood ramps materials used in construction should meet the requirements for scaffolds. Width should be adequate for traffic and open sides should be protected with standard railings 42 inches high.

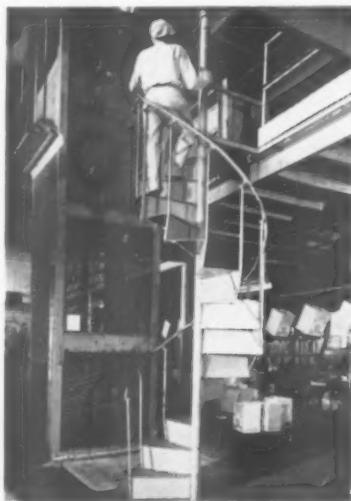
Toe boards should be installed where the ramp extends over a work place or passageway. Cleats 16 inches apart are needed on steep inclines.

Planks should not overlap. The length of the plank should run the long way of the ramp. Ramps used for wheelbarrows should have an odd number of planks with no cleats on the center plank. Width should be not less than three feet.

Concrete ramps are recommended for heavy traffic. Anti-slip surface is obtained by rough floating or incorporated in the finish coat. Hardeners and troweling should be avoided.

Concrete that has been worn smooth can be roughened by scrubbing with dilute nitric or muriatic acid. The surface is then hosed to remove all traces of acid.

Ramps used by heavy vehicles,



Where space is limited a circular stairway may be necessary. This one was erected by plant men from standardized sections. A variety of slip-resistant treads are available for either circular or standard stairways. (Woodbridge Ornamental Iron Co.)

such as power trucks and heavy-duty hand trucks, should have solid curbs as well as handrails.

Ramps included as part of aisles or traffic routes should be as wide as the aisle to avoid bottlenecks.

Splinters, nails, irregularities and breaks in the surface should be repaired immediately. Cracked or pitted concrete can be resurfaced with one of the numerous flooring compounds on the market.

Outdoor ramps and platforms should be kept clear of snow and ice in winter. If ice cannot be removed immediately, sand or cinders may be applied to give traction. In cold climates radiant heating installed in the concrete is often a good investment.

#### FIXED LADDERS

Fixed ladders should have parallel sides of wood or metal, and should be permanently fastened at top, bottom and intermediate locations. If 20 feet or longer, the ladder should be provided with cage or basket guard.

Fixed ladders over 30 feet long should be built in zigzag sections, unless cages are used, and should be provided with platforms at intervals of not more than 20 feet.

Side rails should be carried 3½ feet higher and preferably goosenecked. Openings more than 18 inches between the ladder and the working platform should be protected by a landing platform.

#### Light

—From page 22

Translucent coatings for windows on the sunny side of buildings are also helpful in reducing glare.

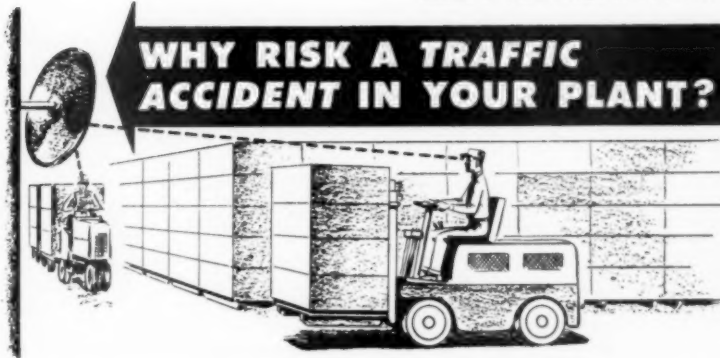
Reflection of daylight from sources outside a building can often be utilized. Light colors for faces of structures, walls of courts, and sawtooth roofs are helpful. These surfaces should be kept clean and free from sources of glare.

Sudden transition from bright to dim areas in a plant is hazardous. While the pupil of the eye is adjusting itself to the dimmer light there is a period of semi-blindness. Gradations of light at the approaches to areas of different intensity will avoid this trouble.

Photoelectric cells can maintain an even level of light, turning on artificial lighting when illumination falls below a specified number of foot-candles.

—To page 32

## WHY RISK A TRAFFIC ACCIDENT IN YOUR PLANT?



**KLEAR-VU SAFETY MIRRORS** are the answer to the dangerous blind corner problem in your plant or warehouse. They are also adaptable for outdoor use in your parking lot, loading dock area or other points where traffic converges.

Mounted at cross aisle intersections, entrances and exits at a height of 8 to 10 feet, Klear-Vu Safety Mirrors clearly reflect oncoming intersection traffic to both power truck operators and pedestrians.

Style	No.	Dimensions
Circular Convex Glass	120	12" dia.
Circular Convex Glass	180	18" dia.
Circular Convex Glass	240	24" dia.
Circular Convex Glass	300M.R.	30" dia.
Circular Convex Glass	360M.R.	36" dia.
Flat Glass Rectangular	918	9"x18"
Flat Glass Rectangular	1640	16"x24"

M.R. indicates metal rim.

Available in either convex or flat glass styles, the mirrors are easily installed and quickly adjustable to any desired angle.

### LESTER L. BROSSARD CO.

540 N. MICHIGAN AVE., CHICAGO 11, ILL.

Write for  
Bulletin.

## GRATING

Open steel flooring; welded or riveted pattern; fabricated in carbon or stainless steel, aluminum, monel and alloys.

when you specify **KLEMP** You Eliminate Maintenance Costs and Assure Worker Safety!

## HEXTEEL

A steel floor armor designed to prolong the life of floors 5 times! Installed in concrete or mastic on new or existing concrete or wood floors

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6601 South Melvina Avenue  
Chicago 38, Illinois  
PORTSMOUTH 7-6760

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6601 South Melvina Avenue, Chicago 38, Ill.  
Gentlemen:  
Kindly send me a copy of your "Data and Specification Manual"

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Write for your **FREE**  
"Data and Specification  
Manual" today!





## Traffic SAFETY MIRROR

- Eliminate traffic accidents at blind corners inside and outside your plant —also at loading platforms.
- Traffic Safety Mirrors are available in convex or flat glass.
- Mirrors are easily installed and adjustable.

WRITE FOR FOLDER and PRICES

ROUND CONVEX MIRROR SIZES	FLAT RECTANGLE MIRROR SIZES
13" x 18"	6" x 14"
26"	14" x 18"

**SILVER TROY Company**  
Mfgs. of Specialty Mirrors for Industrial Use  
92 Lock Street Newark 4, N. J.



## SLIP-ON GUARD

PREVENTS FLUORESCENT LAMPS from FALLING

NO ACCIDENT A DAY KEEPS THE DOCTOR AWAY

### GETS-A-LITE GUARD and GUIDE

Quickly and Easily Installed by Anyone — No Tools Needed!

- Simply slip GETS-A-LITE GUARD AND GUIDE over the fixture, as illustrated.
- Made of indestructible spring steel wire. Nothing to break, get out of order or replace. Will last indefinitely.
- Once installed, GETS-A-LITE GUARD AND GUIDE is NEVER removed.
- Nothing to unlock, fuss with or lock, when changing lamps.
- GETS-A-LITE GUARD AND GUIDE actually steers lamp into socket, enabling maintenance man to change lamp in 10 seconds!
- Available for 40 watt and 100 watt fluorescent lamps.

**GETS-A-LITE Co. — Dept. NS-36**  
3845 N. Milwaukee Ave., Chicago 41, Ill.

## Light

—From page 31

### SPECIAL FIXTURES

Where lighting equipment is required for special uses or subjected to abnormal conditions, many types of lamps and fixtures are available.

**Glow lamps** are used as signal, pilot and night lights. They are not practical for general illumination.

**Shock-resisting lamps** give greater service where ordinary lamps would have a short life because of excessive vibration.

**Weather-resistant lamps** are used for outdoor lighting in industrial plants, docks, athletic arenas, etc. They stand exposure to rain, sleet and snow without cracking.

**Explosion-resistant fixtures** are used where dusts, gases, fumes and vapors may create a hazardous atmosphere.

**Infrared lamps**, available in types and sizes up to 1,000 watts, are used for baking, drying and heating processes, as well as for therapeutic use.

### MAINTENANCE

Efficient lighting requires a systematic maintenance program. Equipment may meet all requirements when installed but dust and grime immediately start reducing light output.

The first step in a maintenance schedule is to check illumination periodically with a light meter. When light has decreased to 75 per cent of its original value, lamps and reflectors should be washed with warm water and a detergent containing no free alkali.

**Group replacement** of lamps, both filament and fluorescent, is often practicable and desirable. The sav-

ing in cost of replacing a large number of lamps at one time is greater than the value of the remaining light output of the lamps. Point of replacement is usually 60 to 80 per cent of the rated lamp life.

**Disconnecting hangers** permit lowering fixtures to the ground or floor for cleaning, relamping and repairs. Much climbing is eliminated.

### OUTDOOR LIGHTING

Outdoor lighting for safer night work or to detect trespassers is required by most industrial plants. Where work is done outdoors after dark, levels must necessarily be higher than those needed chiefly for plant guards to spot intruders and detect unusual activities and conditions.

Light sources should be shielded and aimed so that the area can be seen clearly. Light can be directed to form a "glare barrage" in the direction from which intruders might approach the plant.

### EMERGENCY LIGHTING

Where power failure would endanger life, an emergency lighting system should be provided. It should be independent of the general lighting system. Exit, corridor, platform, wharf, and other locations should be included in the system so that persons could find their way out of a building.

Approved automatic devices should be installed to transfer the lighting load from general to emergency circuits in case of trouble.

**Portable systems.** For such emergencies as fire, explosion, accidents, or mobs, portable emergency lighting is needed. Portable wide and narrow beam floodlights with long extension cords will be helpful in rescue work and maintaining order. For use far from power sources, a power unit mounted on a truck is needed.



## to make your plant SAFER...

Be sure to investigate Conductometer®, the easy-to-operate device for measuring the electrical resistance of flooring, personnel and equipment. A necessity where gases and explosives are used or stored. Helps prevent dangerous and costly explosions. U.I. Listed. Meets N.F.P.A. Requirements. Write for free details now.

As a further step toward greater plant safety inquire about the special conductive floorings and finishes manufactured by our business affiliate, Federal Flooring Corporation.

**CONDUCTIVE HOSPITAL ACCESSORIES CORP.**  
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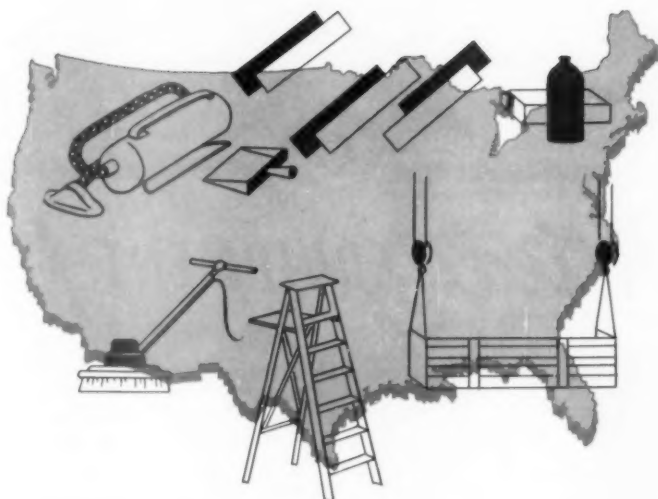


# HOUSEKEEPING and MAINTENANCE

## 2

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**H**OUSEKEEPING takes in the whole plant—indoors and out. Neatness and order are evidence of good management, good supervision, and a well-trained working force. These are the same factors so important in a good safety record.

Good housekeeping is indicated by clearly marked and uncluttered aisles, adequate lighting, floors free from litter and oil slick, orderly storage of materials, freshly painted surfaces, and well-maintained equipment.

Housekeeping requires organization and supervision. It also needs a staff trained in cleaning methods and the necessary equipment and supplies.

Building maintenance involves much work at higher levels. That requires sound ladders selected for the needs of the job and kept in serviceable condition. For more extensive jobs there are many types of rolling and stationary scaffolds.

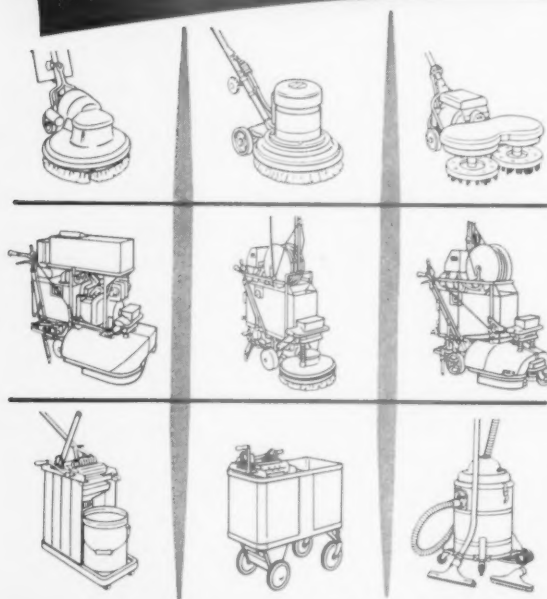
And a clean, safe plant needs constant vigilance.

# Keep your floor-maintenance men happy...



## with *Job-Fitted* EQUIPMENT!

Choose from the **COMPLETE** *Finnell* Line  
More than a score of models and sizes  
permits selection of the equipment  
that's exactly right for your job!



However much a maintenance man may want to do a good job, and at the same time show savings in labor costs, he's *stymied* if the machine is too small, or too large, or is otherwise unsuited to the job. Different floors and areas call for different care and equipment. That's why *Finnell* makes more than a score of floor-maintenance machines. From this complete line, it is possible to choose equipment that is correct in size as well as model... that provides the maximum brush coverage consistent with the area and arrangement of the floors.

*Finnell* makes Conventional Polishing-Scrubbing Machines in both concentrated and divided-weight types, each in a full range of sizes... a Dry-Scrubber, with self-sharpening brushes, for cleaning grease-caked floors... Combination Scrubber-Vac Machines for small, vast, and intermediate operations, including gasoline as well as electric models... Mop Trucks... Vacuum Cleaners for wet and dry pick-up, including a model with By-Pass Motor. In addition, *Finnell* makes a full line of fast-acting Cleaners for machine-scrubbing... Sealers and Waxes of every requisite type... Steel-Wool Pads, and other accessories — everything for floor care!

In keeping with the *Finnell* policy of rendering an individualized service, *Finnell* maintains a nation-wide staff of floor specialists and engineers. There's a *Finnell* man near you to help solve your particular floor-maintenance problems... to train your operators in the proper use of *Finnell* Job-Fitted Equipment and Supplies... and to make periodic check-ups. For consultation, demonstration, or literature, phone or write nearest *Finnell* Branch or *Finnell* System, Inc., 2203 East St., Elkhart, Ind. Branch Offices in all principal cities of the United States and Canada.

### FINNELL SYSTEM, INC.

*Originators of Power Scrubbing and Polishing Machines*



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IN ALL  
PRINCIPAL  
CITIES

## HOUSEKEEPING and SANITATION

**PRODUCTIVE EFFICIENCY**, morale, health and control of accident factors are all aided by housekeeping.

Housekeeping is the combined responsibility of management, supervision, and employees. Maintaining interest requires constant stimulation—through publicity, supervision, discipline, and incentives.

A well-designed, well-built plant can be kept clean, orderly, and free from hazard with much less expenditure of time, effort, and expense. Here are some of the factors to consider:

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- A well-designed, well-built plant can be kept clean, orderly, and free from hazard with much less expenditure of time, effort, and expense. Here are some of the factors to consider:
- Aisles.** They should be of ample width, clearly marked.
  - Space.** Sufficient room to work.
  - Storage.** Adequate and convenient for materials and tools.
  - Materials Handling.** Efficient methods and equipment reduce congestion.
  - Ventilation.** Good general ventilation, plus removal of dust, gases, and vapors at source.
  - Floors and walls.** Should be of construction and material easy to keep clean.
- Lighting.** Well distributed artificial light and effective use of available daylight.
  - Personal service facilities.** Clean, up-to-date washrooms and lockers; an inviting place where employees may eat lunch.
- ### ORGANIZATION
- An adequate crew of able-bodied, intelligent employees is essential. They should be well-trained in their duties and provided with necessary cleaning equipment and supplies.
- Women are usually employed for lighter duties, such as office cleaning and routine care of women's rest rooms.
- ### CLEANING EQUIPMENT
- Vacuum cleaners.** Heavy duty types are available in several models and capacities, with a variety of attachments. In addition to floor cleaning, they are useful for removing dust from corners and from places overhead.
- Where dust sources are close together and a large volume of dust must be removed, a piped system may be practical. Cleaning implements are attached to inlets located at frequent intervals. Some hotels

—**Lighting.** Well distributed artificial light and effective use of available daylight.

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Where dust sources are close together and a large volume of dust must be removed, a piped system may be practical. Cleaning implements are attached to inlets located at frequent intervals. Some hotels and office buildings use this type of dust removal.

For most industrial uses, portable vacuum cleaners are more satisfactory. In most operations, the dust sources are widely scattered and portable equipment meets all requirements.

**Floor machines** of several types handle heavy jobs of floor cleaning efficiently. With them, floors can be scrubbed or dry-cleaned, waxed and polished. Like vacuum cleaners, floor machines can be obtained with a variety of attachments.

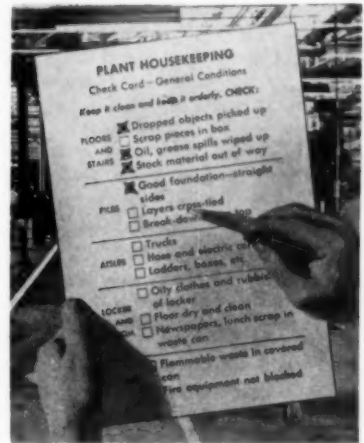
Crusts of dirt, oil and metal cuttings can be removed with revolving wire brushes much more quickly and thoroughly than by hand spudding.

For finer finishing, steel wool rolls can be used. A vacuum pick-up for collecting dust is essential for dry operations. Suction in connection with a scrubber damp-dries the floor quickly. Scrubbing, rinsing and drying can be done with a minimum of interruption to production.

Floor machines may be purchased



Self-propelled floor machine which applies cleaner, scrubs, rinses, and damp dries floor in one operation. (Finnell System)



Check lists keep the inspector from overlooking important points.

or rented. Some manufacturers have service men who will train plant maintenance crews in cleaning methods.

**Power sweepers** are time and labor savers where large areas must be swept and the litter is relatively light. Some models are also used for sweeping up leaves and litter from the plant grounds and driveways.

**Brooms, brushes, mops, etc.** are needed in all plants to supplement mechanized equipment. Tools of good quality are more durable and efficient and they encourage better work.

For dry sweeping, a wide cotton mop or a hair broom may be used. Oily mops may leave a dust-catching film.

**Magnetic sweepers** pick up ferrous chips, filings, nails and tacks from factory floors, drives and walks, where such material might cause fire, explosion or personal injury. This type has a rotary non-electric magnet which is removed from the unit for clearing it of accumulated metal.

A larger power-driven model is used outdoors where large areas must be swept. These will remove nuts, bolts and other ferrous objects around hangars and on runways where they might be sucked into jet engines.

**Aisle marking.** Wide, clear aisles are signs of a well-kept plant. White lines are constant reminders to keep

them free from obstruction and to pile stock within designated areas. The lines can be renewed quickly, neatly and economically with an aisle-marking machine.

Plastic film tape in white and colors is also used for marking aisles and storage areas. It is said to be durable and resistant to moisture and most chemicals used in industry. Lines can be changed and damaged parts replaced easily.

White has been adopted for high-way traffic lines and is preferred for floor marking within the plant.

**Trash containers** at convenient locations throughout the plant help to keep litter off the floor. Containers with self-closing lids are best, particularly where oily rags and waste are stored. Containers may be painted with a distinctive color to call attention to their presence.

**Steam-cleaning units**, which deliver jets of steam and cleaning solution under pressure, are used for cleaning some types of processing and fabricating equipment and removing stubborn deposits of dirt from floors, walls, and ceilings.

Both stationary and portable units are available.

**Smoking areas** are now provided in most plants. Receptacles which will not tip and spill their contents should be provided for cigaret butts and pipe ashes.

## SUPPLIES

Development of more efficient cleaning materials has kept pace with improvements in mechanical cleaning equipment. Much research has gone into the development of cleaning methods. Manufacturers

can furnish helpful data on house-keeping and maintenance problems.

**Detergents.** Basically, water does the cleaning. But water usually needs the aid of a detergent—soap, an alkali cleaning agent, or one of the newer synthetics. Soap is a detergent, but not all detergents are soaps.

There are three types of dirt: (1) Water soluble matter; (2) Oils and greases; (3) Inert solids.

A cleaner removes dirt by dissolving, emulsifying or suspending it.

Soap is one of the oldest cleaners and a most useful one. When used with hard water, soap can be saved by the use of water softeners. Its worst defect is the formation of curds in hard water.

Synthetic detergents are derived from sources other than fats. Petroleum and coal-tar derivatives, and by-products of certain industries provide the raw materials. These cleaners are effective when used with hard water.

Alkalis, such as washing soda, soluble silicates and various phosphates, form the third class of cleaning materials. Compounds of these are marketed under a variety of trade names. They are useful for some types of cleaning where sudsy cleaners are not desirable. They do not form a slippery film on floors.

**Disinfectants and deodorants** are useful, particularly for washrooms and garbage cans. They are not substitutes for detergents.

Odors may indicate either unsanitary conditions or merely a nuisance. They should be removed if possible but a deodorant may be needed.



Heavy duty portable vacuum cleaner removes dust, litter, and scattered raw material from hard to reach places. (U. S. Hoffman Machinery Co.)

## CARE OF FLOORS

Floors of all types have longer life if properly cared for. A protective coating of some type is desirable.

Hardwood flooring in its natural state dries out and cracks and splinters under traffic. Scrubbing raises the grain of the wood and excessive moisture causes it to swell and warp. For protective coatings, sealers, en-

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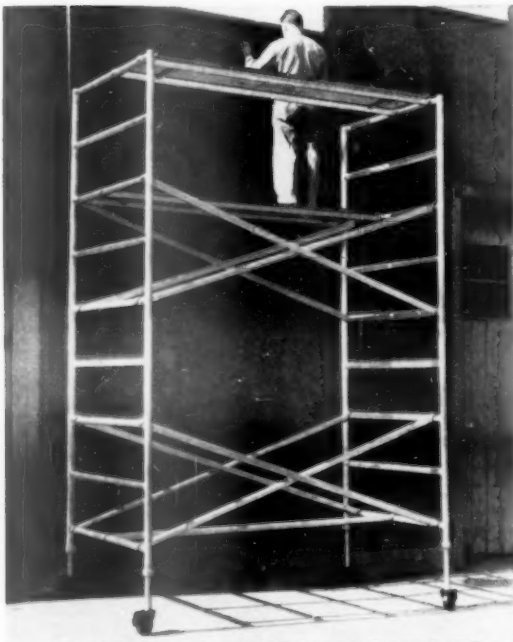
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A battery of floor maintenance machines goes to work on a wood block floor with a thick crust of grease and dirt. Drum-type machines with scarifying attachments or wire brushes cut the dirt, and a power sweeper follows, picking up the litter. (G. H. Tennant Co.)





MANY TYPES of repairing, painting and electrical work are easier and safer because of the extra working room and added stability of this 4'6"-wide Aluminum Ladder Scaffold. Available in 6', 8' and 10' spans. Base section is 6' high. Other heights by combining 4' and 5'4" units. Has safety 24" leg adjustment and rubber-tired casters. Approved by UL.

## How to Keep Costs Down On Overhead Work

WHEN MAINTENANCE goes above floor-level the increased risks can be costly—in lives as well as dollars!—unless you provide efficient platforms that place men where they can work quickly, easily and safely.

Avoid trouble—use this safety check-list to match your equipment to each off-the-floor job: 1. Is work within ladder range? 2. Is there a wall for support or bracing? 3. Is area below work suitable for giving support? 4. Is frequent shifting of equipment necessary? 5. Must people and machines be under work area? 6. Will the scaffold or ladder carry the load?

You can keep overhead job costs and risks under control with Patent Scaffolding Co. Ladders and Scaffolds. PS can supply you with the right equipment for any off-the-ground work, because PS has the only complete line. That's why it pays to remember—when it comes to scaffolding, come to PS. Write for free bulletin G-205.

FOR GREATER SAFETY...EFFICIENCY...ECONOMY



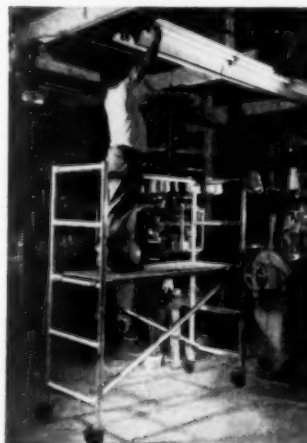
**THE PATENT SCAFFOLDING CO., Inc.**

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West Coast: 6931 Stanford Ave., Los Angeles 1, Calif.  
Branches in all principal cities

National Safety News, March, 1956

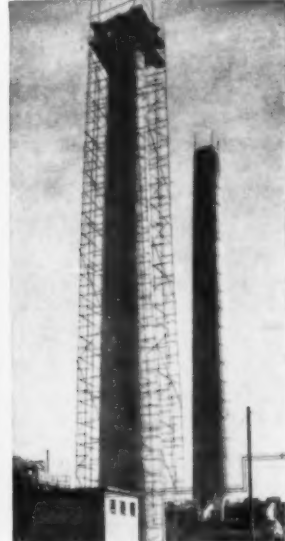


MACHINE REPAIR and other beyond-arm-reach maintenance is safely handled with a "Gold Medal" Platform Step-ladder. Workman stands on a firm, steady platform. Approved by Underwriters' Laboratories.

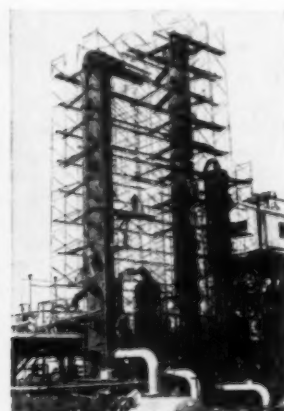


REPLACING FLUORESCENT lamps is a safe, fast job with Aluminum Ladder Scaffold. Ladder Frames come in 29 in. and 4 ft. 6 in. widths with 6, 8, and 10 ft. spans. Base Section is 6 ft. high. Other heights by adding 4 ft. and 5 ft. 4 in. units. 29 in. width is ideal for use in limited-space areas. Approved by UL.

"GOLD MEDAL"® Junior Scaffolds are ideal for outside painting, washing windows and general medium-duty work. Available in steel or aluminum, 100 to 200 ft. of cable. Raised by ratchet lever. Approved by Underwriters' Laboratories.



FIRE-SAFE TUBELOX® Steel Scaffolding has practically no size or height limitation—is widely used for construction and repairs. Easily erected on uneven terrain, it conforms to any contour.



"TROUBLE SAVER"® Sectional Scaffolding provides safe platforms for men working at Koppers Co. refinery, Port Acres, Texas. It is erected from pre-fabricated 5-ft frames. Approved by UL.



To help you solve any scaffolding problem, PS offers a complete nation-wide engineering service—available locally. See the Yellow Pages in your 'phone book for the nearest Patent Scaffolding office or representative handling "Gold Medal" Scaffolds.

## HOUSEKEEPING AND SANITATION

—From page 36

amels and varnish are used. Sealers penetrate the wood and produce a durable finish.

Concrete, while resistant to moisture, has a tendency to dust under traffic. This can be checked by treating with a sealer. If color is desired, a penetrating dye or a floor enamel may be used.

Linoleum, asphalt tile and rubber tile have an impervious and decorative surface. Care consists of cleaning and preserving this surface. As little water as possible should be used in cleaning.

**Wax** protects the surface and preserves appearance. It makes regular maintenance easier by keeping dirt on the surface instead of being ground into the floor.

Water emulsion (self-polishing) wax can be used safely on all types of floors. Buffing waxes contain solvents which injure asphalt and rubber. Either type may be used on vinyl floors.

Self-polishing waxes are considerably less slippery than buffing waxes. Tests have been made to determine the frictional resistance of various floor finishes on different types of floors. However, it has not been found possible to give any finish a rating which would apply for all surfaces and all conditions.



Magnetic sweeper removes iron and steel particles from floor. (Eriez Manufacturing Co.)

For floor scrubbing, the cleaner should do the work without leaving a slippery film. Soap is permissible for such surfaces as concrete, common brick, wood block and mastic. For marble and smooth tile a cleaning powder that does not leave a slippery residue should be used.

Strong alkalis and coarse abrasives are injurious to many types of floors, and usually milder cleaners will be effective.

Floor coating and finishing materials are listed by Underwriters Laboratories in three classes. Materials listed have been found to have slip-resistance characteristics of not less than 0.5 as determined by the static friction test method of U. L.

### I. Floor Treatment Materials (FTM)

1. Water-base materials.
2. Fillers, sealers, varnishes, and similar materials.
3. Detergents.
4. Abrasive-grit-bearing liquids.
5. Waxes, other than water base.
6. Sweeping compounds.

(The Gas and Oil Equipment List lists materials according to fire hazard classification.)

### II. Oil and Grease Absorbents (OGA)

**III. Walkway Construction Materials (WCM).** Includes floor plates and stair treads made of:

1. Natural stone.
2. Composition.
3. Abrasive grit surfaced materials.

### OIL ABSORBENTS

Around machines where oil and grease accumulate, hazardous and unsightly conditions develop. Oil spills should be cleaned up promptly. Non-combustible absorbents make it easier to keep floors clean and reduce slipping and fire hazards.

Absorbents are of two types—one for oils and greases; the other an all-purpose absorbent where water and other liquids are also present. They have a much greater absorbing capacity than sawdust, waste or rags, are non-combustible, and less bulky.

Absorption efficiency of these compounds and their fire safety are rated by Underwriters Laboratories. The compounds are not subject to spontaneous heating unless the absorbed oil has that characteristic.

Oil-soaked garments, shoes, ropes and belts can be dry cleaned by burying in the compound.

Sweeping compounds keep down the dust from dry sweeping. These are listed by Underwriters Laboratories in two groups: Class I, non-combustible; Class II, slow-burning. Tests include combustibility, behavior on heating, and spontaneous heating characteristics.

### Wiping Up the Grease

Taking oil and grease off machine tools and dies and other wiping jobs may be done by paper wipers, industrial wiping towels, and waste or salvaged rags.

Either of the first two methods is more likely to promote good housekeeping. Paper wipers are collected and burned at the end of the day, reducing the fire hazard. Convenient receptacles are needed. The paper is highly absorbent and has enough wet strength for use with solvents.

Wiping towels are of sturdy cotton cloth which is absorbent and offers some protection to the hands where work is done around metal chips and turnings or on rough surfaces. Towels are furnished by industrial laundries.

With salvaged rags and waste, men sometimes have a habit of keeping partly used rags behind benches, in corners and under machines, creating a housekeeping problem and a fire hazard. Safe metal containers should be provided and their use required.

Cleanliness around steam pipes is important. Prevent accumulations of dust, lint and other finely divided material that might ignite.



Aisles can be marked by stripes of paint, or by plastic as applied by this device. (Minnesota Mining and Manufacturing Co.)



Which of these  
**LEGGE POLISHES**  
best suits your  
**NEEDS?**

**Want to Eliminate Buffing?**  
**LEGSURE:** For all resilient floors. This resin-type water-emulsion Safety Polish coats floors with a tough-wearing, dirt and water repellent film. Gleams without buffing. Slip-resistant, scuff-resistant. Lasts for months.

**Prefer to Continue Buffing?**  
**LECO:** For all resilient floors. This water-emulsion polish goes up to 75% beyond U. L. requirements for slip-resistance. It's a bear for wear even under the daily punishment of heavy traffic, high heels and moved furniture. Rarely needs stripping.

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## RODENT AND INSECT CONTROL

**RATS, MICE AND INSECTS** eat, destroy and spoil millions of dollars worth of food and other materials every year. These pests are also carriers of many diseases.

An effective program of rodent control has three parts:

1. Sanitation—taking away food and shelter.
2. Ratproofing—building him out of places where he can get food and cover.
3. Reduction—by various methods of killing. Without the other two methods, reduction can be only temporary.

Rodents cannot exist without food, water and shelter. This makes good housekeeping vital for factory, home and farm—indoors and out.

Scraps from the kitchen and from employees' lunches should be placed in covered metal containers. Spilled grain or other edible materials should be swept up daily.

Ratproof construction helps to keep them out of a building. Concrete, bricks and metals of 24 gauge or heavier are effective. Hardware cloth screens should have not more than half-inch openings—for mice one-quarter inch.

Material stored on the ground provides shelter. Rodents will have difficulty getting established if the material is stored on racks 18 inches above the ground.

**Extermination.** Traps, gases and poisons are still the most effective methods of keeping down the rodent population. Their natural enemies, such as dogs, cats, ferrets, snakes and hawks, are not dependable and some of them, obviously, are not desirable pets.

Many types of traps have been devised but the old wooden bait trap is still widely used.

**Poisons.** Red squill has long been a popular and effective rat killer. It acts as an emetic on other animals but rats and mice cannot vomit and death results.

Warfarin, one of the newer products, is also relatively harmless to most other animals and to human beings. It is used in establishments handling food products where more toxic substances could not be used safely.

More powerful poisons, such as thallium sulfate and sodium fluoro-



acetate (1080) should be avoided by amateurs.

Many other rodent killers introduced in recent years have been discarded because they had too many disadvantages.

**Fumigation.** Carbon monoxide can be used in outdoor places. A hose attached to an automobile exhaust is put down the burrow.

Chloropicrin, or tear gas, has the advantage of being repellant. A heavy application is said to make a burrow uninhabitable for several months.

Calcium cyanide can be applied to burrows with a foot pump. It is not recommended for use indoors where there may not be enough moisture to liberate cyanide, thus creating a delayed hazard. The gas is lighter than air and outdoors it rises rapidly and it has a strong warning odor.

Methyl bromide is an effective gas but its use is recommended only for professionals.

#### INSECTICIDES

Wherever food is grown or processed, a constant fight must be waged against insects. For farm and garden the traditional poisons such as lead arsenate, Paris green and nicotine sulphate have been supplemented by much safer products such as rotenone, pyrethrum, and DDT.

No insecticide, however, should be considered harmless. The user should avoid inhaling dust or spray of any kind and allowing any of it to remain on the skin. For extensive use, protective clothing and gloves and a respirator may be desirable.

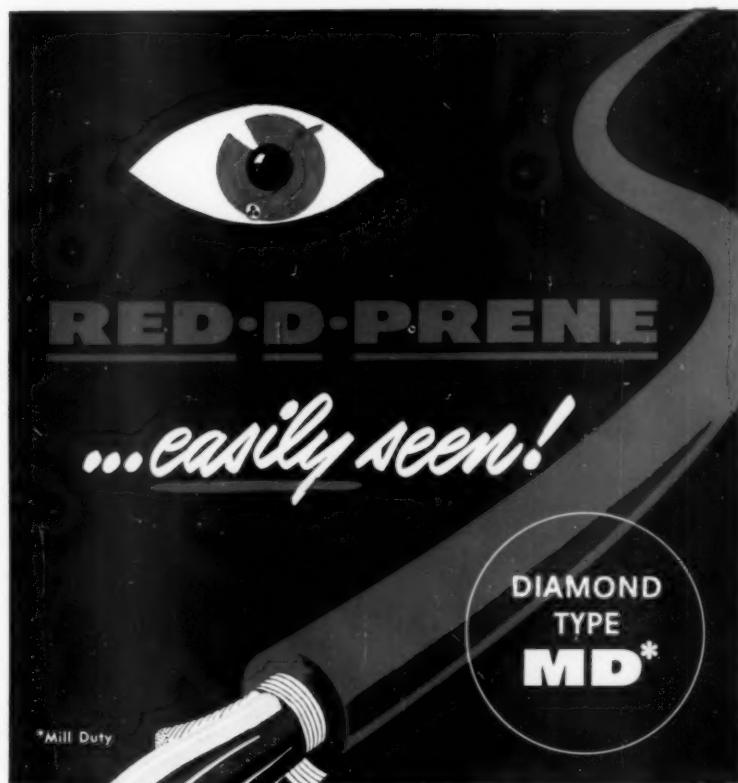
Lethal fumigant gases are used for exterminating weevils, moths, beetles and other insects. Carbon disulfide has been used for controlling weevils in grain but it is highly toxic and highly flammable.

Fumigation should be done only by licensed fumigators.

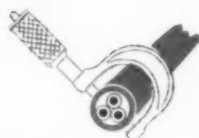
#### STORAGE OF PESTICIDES

The numerous basic chemicals and their combinations used in pest control have their technical names and a confusing variety of trade names. These range from relatively harmless materials to deadly poisons.

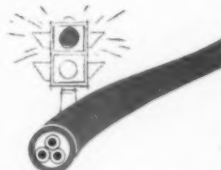
One person should be assigned responsibility for handling and storage. As an extra precaution, containers and sprayers should be painted a distinctive color, with contents, uses and hazards plainly marked. These materials should be kept under lock and key and used only by members of the sanitation squad.



*Portable Cords in Industrial Red minimizes accidents...cuts maintenance costs!*



No flat sides, no off center conditions. Gives maximum flexibility, is moisture resistant.



Industrial Red sheath provides maximum visibility for absolute identification.

For positive identification — in your stockroom or inside and outside the plant by maintenance men—Type MD RED-D-PRENE is your safe choice! First designed with a tough, oil-resistant Neoprene sheath (in Industrial Red). Assures long wear, materially reduces maintenance costs. Carries current where you want it, safely and at lower cost. Outstanding for heavy duty use in Mill and Plant installations.

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**DIAMOND WIRE & CABLE CO.**

SYCAMORE, ILLINOIS

# WHAT COLOR DOES

- Conserves light
- Improves visibility
- Creates pleasant, restful surroundings
- Aids in maintaining good housekeeping
- Identifies fire and accident prevention equipment
- Spotlights point of operation on machines
- Gives added attention value and emphasis to instructional and warning signs

**COLOR** has many decorative and functional uses but to get the full benefit it must be applied scientifically. Color experts and paint manufacturers have conducted considerable research in the subject and help is readily available.

**Reactions to colors.** Certain colors are known to arouse definite mental and emotional responses. Familiar colors and the usual reactions to them are:

**Yellow**—cheering and stimulating.

**Blue**—Gives feeling of coolness; desirable where temperatures are high.

**Green**—Restful to the eyes. Blue-green is cool; yellow green has more warmth.

**Red**—Danger, excitement; associated with fire.

**Orange**—A bright warm color to be used with discretion.

**Violet, purple**—Rich colors with implication of luxury.

## BACKGROUND COLORS

Color schemes which conserve light yet provide more cheerful and attractive interiors than the old plan of white for ceilings and upper walls and "practical" dark colors for dados and machines have been developed by paint companies.

Sharp contrasts in bright and dark

areas cause eyestrain because of the continual adjustment of the eye.

White is widely used for ceilings because it reflects more light—80 to 88 per cent. For rooms with low ceilings, or where people frequently look up at them, as in hospital rooms, cream, ivory or sky blue is preferable to dead white.

Colors of high reflectance are also suitable for overhead networks of girders, pipes and other equipment.

Soft tints, such as light gray, pale green and light blue, are suitable for sections of walls in the range of vision. Soft gray, for example, is restful and does not show dust.

A dado the height of work benches and machines, or about one-third the height of the wall, makes stains, soil and marks less conspicuous. It may be a deeper tone of the color used on the upper wall but should not be too dark.

**Floors** should have a reflectance value of 25 per cent or more. For machines, desks, and benches, 25 to 40 per cent is suggested.

## POINT OF OPERATION

To make it easier to see the work and to avoid injury, paint is used to spotlight the point of operation. The body of the machine is painted in one color and the working areas in a lighter tint.

Four shades of gray, ranging from light to dark, are standard colors for machines. Critical parts should stand out in cream, light tan, or other light contrasting colors.

**Light sources and color.** Type of light source should be considered in selection of colors. Incandescent lamps tend to reduce strength and intensity of color because of a slight yellowing effect of the light.

Fluorescent light is of three types—white, daylight and soft white. Daylight units give a bluish hue and can be used with blue, green and blue-violet. White and soft white

units produce a warm light suitable for ivory, cream, beige, rose and tan.

## COLOR FOR IDENTIFICATION

Safety codes for the use of standard colors for identification of equipment and hazards have been developed by the American Standards Association. *Safety Color Code for Marking Physical Hazards and the Identification of Certain Equipment* Z53.1—1953 specifies uniform colors for marking physical hazards, for indicating the location of safety equipment, and for identifying fire and other protective equipment.

**Red** is recommended for identification of fire protection equipment, and for walls or supports on which extinguishers are mounted; flammable liquid containers (except shipping containers) on which the name of the contents should be stenciled; lights at barricades and danger signs; emergency stops on machines such as rubber mills, wire blocks and flat work ironers; and emergency stop buttons for electrical switches.

**Yellow** has high visibility and is recommended for marking hazards that may result in slipping, falling, and bumping into objects. Solid yellow and stripes and checks of yellow and black, may be used to attract special attention. Top and bottom treads of stairways, low beams and pipes and crane hooks are places where yellow may be used.

Black and yellow stripes are often used on mobile equipment, such as tractors and industrial locomotives.

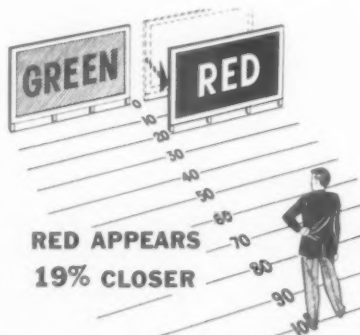
**Green** in combinations with white, such as a green cross on a white background, is used to designate the location of first-aid and safety equipment. Location of stretchers, gas masks, and bulletin boards is identified by this color.

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### PAINT REFLECTION VALUES (Per cent)

White	88
Ivory	69
Cream	67
Sky blue	65
Pale green	59
Buff	52
Aluminum	41

Above values are only approximate since colors vary with different paint manufacturers.



As much as 19 per cent change in apparent distance can be attributed to deep colors.



## Pittsburgh COLOR DYNAMICS®

improves productive  
efficiency as operators  
are helped to see  
their work better



### How You Can Get an Engineered Color Study of Your Plant—FREE

• Why not test the practical value of COLOR DYNAMICS in your plant—on a machine or two, or in a whole department? Send for our free comprehensively illustrated book which explains how you can make use of this modern painting

system simply and easily. Better still, call your nearest Pittsburgh Plate Glass Company branch and ask to have a representative give you a detailed engineered color study of your plant, without cost or obligation. Or mail coupon at right.

Properly engineered colors reduce eye fatigue and cut down accidents in Mt. Wolf Plant of the American Wire Fabrics Corp.

**A**NOTHER impressive example how Pittsburgh COLOR DYNAMICS improves productive efficiency and reduces danger of time-loss accidents by lessening eye fatigue among employees is the Mt. Wolf, Pennsylvania, plant of the American Wire Fabrics Corporation.

This plant, a subsidiary of The Colorado Fuel and Iron Corporation, one of the nation's leading steel producers and fabricators, manufactures insect wire screening and industrial cloth.

The benefits which derive from the COLOR DYNAMICS system of painting are best expressed in this comment of B. L. Weaver, American Wire Fabrics Corporation executive vice president:

"By the use of focal colors on working parts of our machines in con-

trast to eye-rest colors on stationary parts, operators see their work better. This reduces eye strain considerably. As eye strain is one of the chief causes of physical fatigue, we have found that both the quantity and quality of production are improved. Safety colors on hazard areas reduce danger of accidents.

"The clean, well-ordered appearance of our work areas maintains high morale among our employees and a friendly relationship between working force and management. It also makes our operators take pride in their environment. They help to keep their surroundings clean, simplifying housekeeping.

"We regard these benefits as a highly satisfactory plus, as painting the COLOR DYNAMICS way has cost us no more than conventional maintenance painting."

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☐ Please have your representative call for a COLOR DYNAMICS survey without obligation on our part.

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Portrait by Fabian Bachrach

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First results of the industry campaign are now com-

ing in. Gulf Power Company has reached 87.3% employee participation... Utah Power and Light employees have enrolled 69.6% . . . Wisconsin Electric Power reports 69.8% . . . Wisconsin-Michigan Power Company, 62% . . . Wisconsin Public Service, 57.6% . . . Lake Superior District Power, 52%.

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### Plant Shutdown Ahead? Check These Items

1. Remove all waste material from machines, benches, tables, and oily work clothing from lockers.
2. Clean flammable residues from ovens, spray booths, hoods and ducts.
3. Remove solvents, cements and all flammable liquids to safety vaults.
4. Disconnect unused gas and electrical equipment, close main valves and open main switches where possible.
5. Check fire extinguishers, fire pumps, hose, and fire-fighting equipment.
6. Check water pressure for sprinkler system.
7. Check piled stock for obstruction to overhead sprinklers.
8. Clean plant thoroughly of all debris; keep aisles clear and open.
9. Appoint standby crews or watch service for the shutdown period.
10. Notify Fire, Police, ADT and other services of vacation period.

Keeping bearings properly lubricated will prevent overheating, a cause of many fires in oil or lint deposits at the bearings.

### ★ This Positive Ladder Safety Device



It locks automatically—instantly—holds.

### SAFETY DEVICE FOR LADDERS

*Prevents death and injuries from falling.*

**Automatic: Positive.** Will catch workman if he starts to fall even if unconscious.  
**Inexpensive.** Easy to install. No upkeep. Clamps to any rung ladders, peg ladders, pole or frame. No welding or cutting.  
**Simple to operate:** Requires no attention from climber.  
**Notched rail hot dipped galvanized.** Entire equipment rust and corrosion proof.  
In use throughout country and abroad for approx. 8 years.

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National Safety News, March, 1956



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**RIGHT IN YOUR OWN OFFICE** you can test the difference of Eagle-Picher Industrial Floor-Dry with whatever oil absorbent you're now using. You'll discover it actually absorbs as much as 100% or more liquid per pound than other floor drying materials.

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**WRITE TODAY.** Our Eagle-Picher representative will bring the portable laboratory to your office where you may make this test yourself. The Eagle-Picher Company, Cincinnati 1, Ohio.



# PORTABLE LADDERS

**WHERE FREQUENT** access to any location is needed, stairways, ramps or fixed ladders are desirable. But for occasional access to scattered points, the portable ladder is indispensable. No business or industrial plant could get along without them.

Defective material or construction is seldom responsible for accidents involving ladders. But some ladders were never built for heavy industrial use and sometimes the wrong type of ladder is used for the job. And ladders receive a lot of neglect and abuse.

Unsafe work practices figure frequently in ladder accidents and occasionally physical disability of the user is the cause.

## STANDARDS

A reliable guide is the American Standard Safety Code for Portable Wood Ladders, A14.1-1952. Ladders built according to its specifications are plainly labeled.

Metal ladders are not covered at present by an ASA code and the reputation of the manufacturer is the buyer's best protection. The Metal Ladder Manufacturers Association, organized in 1949, has established its own standards. Magnesium and aluminum ladders built according to these specifications meet exacting requirements.

## DEFINITIONS

Following are types of ladders commonly used in industry as defined in the American Standard Safety Code:

**1. Stepladder.** A self-supporting portable ladder, non-adjustable in length, having flat steps and a hinged back. Its size is designated by the over-all length of the ladder measured along the front edge of the side rails.

**2. Single Ladder.** A non-self-supporting portable ladder, non-adjustable in length, consisting of but one section. Its size is designated by the over-all length of the side rail.

**3. Extension Ladder.** A non-self-supporting portable ladder adjustable in length. It consists of two or more sections traveling in guides or brackets so arranged as to permit length adjustment. Its size is designated by the sum of the lengths of the sections measured along the side rails.

**4. Sectional Ladder.** A non-self-

supporting portable ladder, non-adjustable in length, consisting of two or more sections so constructed that the sections may be combined to function as a single ladder. Its size is designated by the over-all length of the assembled sections.

**5. Trestle Ladder.** A self-supporting portable ladder, non-adjustable in length, consisting of two sections hinged at the top to form equal angles with the base. Size is designated by the length of the side rails measured along the front edge.

**6. Extension Trestle Ladder.** A self-supporting portable ladder, adjustable in length, consisting of a trestle ladder base and a vertically adjustable single ladder, with suitable means for locking the ladders together. Size is designated by length of trestle ladder base.

**7. Special-Purpose Ladder.** A portable ladder which represents either a modification or a combination of design or construction features in one of the general purpose types of ladders previously defined, in order to adapt the ladder to special or specific uses.

**8. Trolley Ladder.** A semi-fixed ladder non-adjustable in length, supported by attachments to an overhead track, the plane of the ladder being at right angles to the plane of motion.



Safety ladders provide a working platform for maintenance jobs. Some are equipped with casters on the back feet for easy movement.



No precautions have been overlooked on this job. The ladder is in good condition with ladder shoes and a cross piece at the top for use against the window opening. As an added precaution, a fellow worker is holding the ladder. To keep traffic away, the warning sign is supplemented by horses.

**9. Side-Rolling Ladder.** A semi-fixed ladder, non-adjustable in length, supported by attachments to a guide rail, which is generally fastened to shelving, the plane of the ladder being also in its plane of motion.

## MATERIALS AND CONSTRUCTION

**Wood,** which meets the requirements of weight and strength at moderate cost, is the most widely used material. Acceptable kinds and grades of wood are listed in the ASA Code.

Ladders may have either spreading or parallel straight lines. They may have sides flaring at the base to increase stability, and converging at the top for specific uses.

**Laminated ladders.** Side rails of laminated wood are a recent innovation in ladder construction. Such ladders have high strength-weight ratio, are able to carry substantial loads after initial failure, give distinctive sound warnings as failure progresses gradually.

Laminated ladders are available in single and two-section extension ladders and several specialized types.

**Light Metals.** Aluminum and magnesium alloys are light in weight and resistant to moisture. In case of overload there is deflection warning instead of sudden breakage. Prices are higher than for wooden ladders.

Metal ladders should be free from sharp edges and burrs on the side



# New Du Pont Safety Floor Wax

with slip-retardant LUDOX<sup>®</sup>  
(colloidal silica)

**gives superior  
slip resistance plus  
long-lasting beauty**

The anti-slip protection of new Du Pont Safety Floor Wax brings a new measure of safety to floors in schools, plants, hospitals, stores, restaurants and other public buildings. And it gives this vital extra security *along with* full gloss, washability and extra-long life!

A premium slip-retardant wax, Du Pont Safety Floor Wax gives long-lasting beauty to linoleum, asphalt tile, rubber tile, vinyl tile and any other resilient floor covering. It is water-resistant—dries to a satin gloss in 20 minutes, then buffs to a high shine. Can be damp-mopped and buffed again and again with no loss in anti-slip protection. Available in 1-gallon, 5-gallon, 30-gallon, and 50-gallon containers.

You can get new Du Pont Safety Floor Wax through a Du Pont Floor Wax distributor in your area. For name of nearest source and information, write Du Pont Company, 7010-1 Du Pont Building, Wilmington 98, Delaware.



BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

**EVERY STEP** is safer because Du Pont Safety Floor Wax is fortified with anti-slip "Ludox"—transparent particles of colloidal silica. Under pressure these tiny particles are pushed into softer wax globules. They absorb much of the foot's forward energy . . . give positive traction underfoot!



Ladder stabilizer keeps ladder firm and steady in any position on uneven surfaces. It can be attached to any single or extension ladder. (Mine Safety Appliances Co.)

rails. Soft metal rivets that might shear off under load should not be used.

Metal ladders are conductors of electricity and should not be used around electrical equipment. Decals or painted warnings against such use should be carried on all metal ladders.

Single, extension, stepladders, platform ladders, and planks, stages and hangers are available in light metals.

**Stepladders** are available in lengths up to 20 feet. Three types are listed by the Code:

- I—4 to 20 feet, heavy duty
- II—4 to 12 feet, medium duty
- III—3 to 8 feet, light duty

More substantial construction is, of course, specified for the longer, heavier duty ladders.

Stepladders should be constructed so that the front section will have level treads when in the open position.

The rungback stepladder permits a helper to assist from the back of the ladder.

A spreader or locking device of sufficient size and strength to hold front and back sections securely in the open position is important.

A bucket shelf is useful for many maintenance jobs. It should support a load of 25 pounds and be fastened so that it can be folded up when the ladder is closed.

**Platform (safety) ladders** are a development of the stepladder. They provide a solid working platform guarded on three sides. They are

particularly useful on jobs at fixed heights where the work requires considerable freedom for the worker.

Safety ladders are usually built for heavier duty than the ordinary stepladder.

Height to platform ranges from 3 to 18 feet, over-all height being two feet more.

**Single ladders** up to the maximum length of 30 feet specified by the Code are available. For sizes larger than 24 feet, extension ladders are preferred for convenience in storage and transportation.

Sectional size of side rails varies with the length of the ladder and diameter of rungs increases with the width of the ladder between side rails.

Diameter of rungs should be not less than  $1\frac{1}{8}$  inches. Holes for rungs may extend through the side rails or be bored to give at least  $13/16$  of bearing to the rung tenon.

**Oilers' ladders** are provided with hooks at the top so the ladder may be securely fastened to overhead shafting.

**Extension ladders.** Two-section extension ladders up to 60 feet in length are recognized by the Code. Specifications for dimensions of side rails and type of wood permitted vary with the length of the ladder.

Minimum overlap for ladders up to 36 feet is 3 feet; from 37 to 48 feet, 4 feet; from 49 to 60 feet, 5 feet.

Smaller side rails on rung-type ladders are acceptable when reinforced by steel wire running the length of the side rails and securely fastened to them.

Locks must be positive in action. Guide irons must be securely attached to the ladder and so placed as to prevent the upper section from tipping or falling out while raising, lowering, or in use.

Rope and pulley for raising and lowering, while not mandatory, are desirable.

## REFERENCES

### Ladders and Scaffolds

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—Ladders, Aluminum and Other Metal; Safety Reprint Gen. 7.

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—Rolling Scaffolds; July 1951.

—Safer Maintenance with Swinging Scaffolds; May 1952.

—Testing Scaffold Planks; W. E. Ross-nagel, July 1950.

American Standards Assn.: Ladders, Safety Code for Construction, Care and Use of; A14-1952.

**Trestle ladders** of the "A" type (with a center section which slides up and down) are used in maintenance work. These ladders are commonly used in pairs with a stage between them or in sets of four with two stages and with planks from stage to stage.

Points to be considered in selecting extension trestles are guides of adequate length, strong locks of the sliding section, and a safety spreader.

**Telescoping ladders** are mounted on rubber tired ball-bearing wheels with floor locks. Maximum height of working platform is 15 feet. When down, it will go through an ordinary door or into an elevator.

**Telescoping towers** reach still greater heights. These portable units can be extended up to 49 feet. The man on the platform controls the travel through an electric push-button system. Another push-button control is located on the frame below but the man above can lock the platform in place by pressing a

—To page 54

## EQUIPMENT FOR REACHING VARIOUS HEIGHTS

TYPE OF EQUIPMENT	Up to 12 ft.	12 to 18 ft.	18 to 30 ft.	Above 30 ft.
Catwalk or truss.....	—	—	X	X
Crane (where available).....	—	—	X	X
Crow's Nest Ladder.....	—	—	X	—
Disconnecting hanger.....	—	—	X	X
Portable maintenance platform.....	—	X	X	—
Relamping bridge.....	—	—	X	X
Stepladder.....	X	—	—	—
Straight ladder.....	—	X	—	—
Telescoping platform, elevating tower, etc.....	—	X	X	—



# HILD

**NEW!**

## EXPLOSION PROOF Floor Maintenance Equipment

PERFECTLY SAFE TO USE ANYWHERE

**CUT COSTS!  
SAVE CLEANING TIME!**



**HILD  
CX EXPLOSION PROOF  
SCRUBBER-POLISHER**

This machine approved by Underwriters' Laboratories for Class 1, Group D (naphtha, gasoline, benzene, paints).

### MAINTENANCE EQUIPMENT and SUPPLIES FOR EVERY INDUSTRY and INSTITUTION

Vacuums • Scrubber-Polishers • Upholstery Shampoo Machines  
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WET AND DRY  
VACUUM**



Model No. 315

Approved by Underwriters' Laboratories for Class 2 and Groups D, E, F, G (vapors, metal dust, magnesium, powdered metals, carbon black, grain dust).

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## MECHANIZE YOUR CLEANING

Until now, chemical and paint plants, refineries, distilleries and other industries having explosion hazards were forced to use costly, mop-and-pail methods of floor maintenance. HILD'S new machines mechanize clean-up operations... cut cleaning time and costs to a fraction... pay for themselves in no time... bring big savings for years to come! Both machines are approved by Underwriters' Laboratories.

**HILD CX Explosion-Proof Scrubber-Polisher:** An all-purpose machine. Used with easily interchangeable attachments to scrub, wax, polish, buff, sand, grind, and steel-wool floors of all kinds. Motor, switch and connector are totally enclosed. Spark-proof copper mesh cable used between connector and motor. Wheels have neoprene-rubber treads.

**HILD Explosion-Proof Wet and Dry Vacuum:** Can be used for cleaning floors, walls, overhead pipes and beams, bins, shelves, machinery, and for removing "floating" dust. Powerful air suction picks up every drop of moisture. Combustible material removed easily and safely. Moisture in vacuum air stream cannot damage specially designed HILD Bi-Pass motor. 15 interchangeable attachments, including extension tubes for hard-to-reach places, are available for numerous uses. Floors can be vacuum-mopped in fraction of time required in old method—and without interrupting operations.

Two Models—No. 306..... 6 gal. No. 315..... 10 gal.

#### HILD FLOOR MACHINE CO., 736 W. Washington, Chicago 6, Ill.

Gentlemen: Please send, without cost or obligation, complete information on:

- ☐ HILD CX Scrubber-Polisher ☐ HILD Wet and Dry Vacuum  
☐ All HILD Equipment and Supplies ☐ Free "HFX" Survey of our needs

Name.....

Company.....

Address.....

City..... Zone..... State.....

MSN-3-56

# SCAFFOLDS

**CONSTRUCTION** and maintenance work require many types of scaffolds whose design and construction have kept pace with industry's growing needs. The wood scaffold, built on the job by the contractor's men, has been almost entirely superseded by metal scaffolding of several types provided by companies specializing in the work.

Failure of metal scaffolding put up by the manufacturer is extremely rare. Accidents on such scaffolds are generally traceable to unsafe work practices or to physical disabilities of the individual.

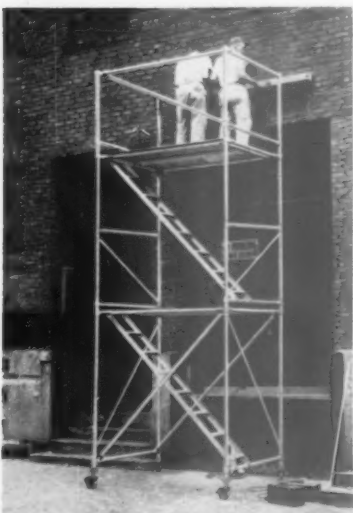
Some men are unable to work safely at high levels and those assigned to such jobs should be selected carefully.

## TYPES OF SCAFFOLDS

For general use and for special trades, many types of scaffolds have been designed. Common types are:

- Built-up—sectional-frame and tube-and-coupler.
- Hanging—heavy duty suspended scaffolds and light-duty swinging scaffolds.
- Rolling—movable units made by fitting casters to either type of built-up scaffold or to special aluminum components.

Every scaffold and its supporting members should be designed with a factor of safety of at least 4.



One of several types of rolling scaffolds. This stairway type of aluminum sectional scaffold was used for installing a loading crane. (Patent Scaffolding Co.)

**Tubular steel scaffolds** are used on large jobs where work will be carried on at great heights. Advantages over wood scaffolds built on the job are: (1) safety for the worker; (2) lower scaffolding costs; (3) decreased fire hazard; (4) improved appearance.

Scaffolds may be either purchased or rented. When rented, the contract usually includes erection and dismantling by experienced crews.

Steel scaffolds, except for the wood planks, are non-combustible. They offer less resistance to wind than all-wood scaffolds. Interchangeable parts which make the scaffolding adaptable to so many jobs also facilitate erection and dismantling.

**Rolling scaffolds** can be erected from sectional steel scaffolding components or tube-and-coupler scaffolding components and fitted with casters. There are three other types of rolling scaffolds:

- Sectional ladder scaffolds of steel or aluminum.
- Sectional aluminum scaffolds with interior or exterior stairway.
- Those made up of folding one-piece sections.

These workstands provide more space than a platform ladder, permitting more than one man to work and providing more space for tools.

Workstands of the wheelbarrow type can be moved easily by one man.

Telescoping portable towers are used for some types of maintenance work.

Caster locks should be provided on movable equipment to prevent movement while in use.

**Swinging scaffolds** are light-duty equipment, primarily for men and hand tools with a minimum of equipment. They are used for painting, tuck-pointing, glazing, and other operations where scaffold height is adjusted frequently as work progresses.

A swinging scaffold should be hung securely from eaves, cornices, or other reliable support, with strong hooks. Anchorage should be inspected before the hooks are placed.

Ropes should be of the best grade manila not less than  $\frac{3}{4}$  in., on at least 6 in. blocks. Steel cable should be not less than  $\frac{5}{16}$  in. Steel cable



Tube-and-coupler steel scaffolding is built up as construction progresses. Scaffolds are erected and dismantled by experienced crews provided by the manufacturer. (Mon-santo Chemical Co.)

is wound on a drum, not pulled by hand.

Each man working on a swinging scaffold should be supplied with a safety belt and a life line extending from the roof to the ground. The safety belt rope should be tied to the life line with a triple sliding hitch.

**Suspended scaffolds** are supported by outrigger I-beams attached to the frame of the building. They are recommended for use on buildings more than five stories high which have a frame to provide the over-head support. The scaffold is raised and lowered by steel cable operated by a winch.

The shackles or beam clamps holding the cables should be securely fastened to the outriggers with a stop bolt in the outer end of each outrigger. Cables should be securely fastened to the outriggers and to the putlogs which carry the platform or to the hoisting machines.

**Wooden scaffolds** are temporary structures built on the job. Attempted economies in materials and workmanship frequently result in scaffold failures accompanied by serious injuries, if not by fatalities.

Lumber for scaffolding should be inspected on delivery and stored

—To page 52

★ ★ ★  
SPECIAL

## SPEEDI-DRI SPOTLIGHT

A REPORT TO MANAGEMENT ON INDUSTRIAL SAFETY

★ ★ ★  
SPECIAL

VOL. II

FEBRUARY 1956

No. 1

# New, Improved Sol-Speedi-Dri Offers Top Protection Against Fall Hazard

## "double S-d" Is New Buy-word for Sol-Speedi-Dri; Bag Has New Design

Ask for *double S-d* when you want the finest of oil and grease absorbents! That's the new buy-word for the new, improved Sol-Speedi-Dri. Now it's not only easier on your safety and maintenance budgets—it's even easier to say!

### NEW INSIDE AND OUT

Inside each bag of *double S-d* is an absorbent with new standards of efficiency and economy. Outside, the modern bag design shown at the right meets your eye. And between the bag design and the product are two sturdy kraft paper walls, plus a 90-lb. asphalt liner with silt-proof seams. This rugged protection insures the day in day out uniformity of new Sol-Speedi-Dri—guarantees safe, moistureproof handling and delivery from factory to warehouse to you.

### ORDER YOURS NOW

Try new, improved Sol-Speedi-Dri. See how much more effi-



ciently and economically it performs in keeping your floors clean and safe under foot.

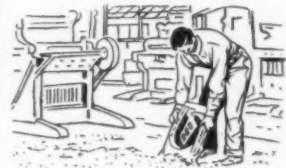
### OUT OUR WAY

BY J. R. WILLIAMS



## No. 1 Oil and Grease Absorbent Keeps Floors Slipproof; Unmatched for Dustlessness

From the research laboratories of the Speedi-Dri Corporation has come news of vital importance to industrial safety men everywhere. Sol-Speedi-Dri—long the most widely used oil and grease absorbent in industry—has been *vastly improved*, thoroughly field-tested. It's virtually a new product, meeting new, higher standards for efficiency, economy and safety underfoot.



### MORE SLIPPROOF

You can't buy a safer mineral absorbent than the new, improved Sol-Speedi-Dri. With harder granules than ever, it absorbs all types of liquids and greases—keeps floors dry and clean—maintains a skidproof, slipproof walking surface. It doesn't slake or become "clayey"—doesn't cake or mat down under traffic.

### ABSORPTION, RETENTION

Sol-Speedi-Dri soaks up oil and grease with thorough efficiency. And it retains what it absorbs. When a saturated blanket is swept up, the floor emerges bone dry. There's no oily "scum" left. Its thirsty granules act like a poultice—drawing oil and grease deposits from the very pores of the floor. Old, oil-soaked floors can be made dry, safe and usable.

### NO DUST HAZARD

An absorbent that is dusty can

cause discomfort for workers, as well as costly maintenance problems.

The new Sol-Speedi-Dri is the most dustless mineral floor absorbent made. Its harder granules are de-dusted during production—are completely inert.

### LOWEST END-USE COST

Considering accident prevention, as well as plant housekeeping, Sol-Speedi-Dri is your best buy for economy. Lower than ever in volume weight, it provides much greater floor coverage per pound—requires less frequent replacement.

The only way to judge any oil and grease absorbent is on a cost vs. performance basis. Judge Sol-Speedi-Dri that way—and you can't logically use any other mineral absorbent.

### SEND FOR YOUR FREE SAMPLE

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(A subsidiary of Minerals & Chemicals Corp. of America)  
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TO STOP THIS



PREVENT THIS



DO THIS  
ECONOMICALLY



SEND FOR SAMPLE and  
PRICES OF THIS



**CANFIELD OIL CO**  
General Offices:  
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Memphis, Tenn., Coraopolis, Pa.

## Scaffolds

—From page 50

where it will be protected from weather.

Spruce, fir, longleaf yellow pine, and Oregon pine are commonly used. Material should be straight grained, free from knots, checks, cracks, decay or other defects.

Structural grades of lumber should be used for scaffold planking wherever possible. Where these are not available, each plank should be carefully inspected.

No planks of less than 2-in. nominal thickness (1½ in. dressed) or less than 8-in. nominal width (7½ in. dressed) should be used.

Specifications for construction of various scaffolds will be found in *Accident Prevention Manual for Industrial Operations*, and *Safety Code for Building Construction A10.2-1944*.

**Railings and toeboards.** Most codes require railings on scaffolds more than 12 ft. high but railings are desirable on lower scaffolds. A top rail should be 36 to 42 in. above the floor with an intermediate rail half way between the top rail and the walkway surface.

Toeboards are needed to prevent tools or materials from falling.

**Overhead protection,** consisting of planking heavy enough to stop any falling object, should be provided for scaffolds when men are working overhead. This protection should be not more than 9 ft. above the working platform.

**Sidewalk bridges.** Where construction or repair work is carried on over sidewalks, protection for pedestrian traffic is needed. Sidewalk bridges of adequate strength are provided by companies furnishing sectional steel scaffolding.



Suspended scaffold supported by outriggers used in repairing parapet. Sandbags provide counterweight. (Waco Manufacturing Co.)

**Ladder-jack scaffolds** are used chiefly by painters and electricians. They should not be used more than 22 ft. above ground or floor or on extension ladders. An unsupported span should be not more than 10 ft.

## Plan Work Furniture For the Individual

**WELL-DESIGNED** work furniture permits efficient work without unnecessary fatigue. Work surfaces should be of correct height. Chairs should be adjusted to the needs of the individual.

Alternate periods of sitting and standing at work reduce fatigue. If this is not practicable, furniture should be planned for maximum comfort and efficiency.

**Work benches.** Height of work surfaces, such as benches, machines, tables and assembly lines is determined by whether the workers sit or stand. Another factor is whether hands or eyes are more important to the operation.

Tilted or recessed tables facilitate some types of work.

**Seating:** Height relationship between seat and work is important. Workers differ quite widely in height and proportions and seat height should be adjusted accordingly.

When selecting a factory chair be sure it is:

- Comfortable
- Safe
- Easily adjustable
- Economical to maintain

A chair should provide back support. Without it the worker uses much energy just sitting erect. The back rest supports the back between the lower ribs and the hips.

A deep form-fitting seat, of the tractor, bucket, or western saddle type, is better than one that is flat or slightly curved. The seat should not touch the tendons and blood vessels on the back of the leg just above the knee.

Too soft a seat is not desirable. Contour is more important than padding.

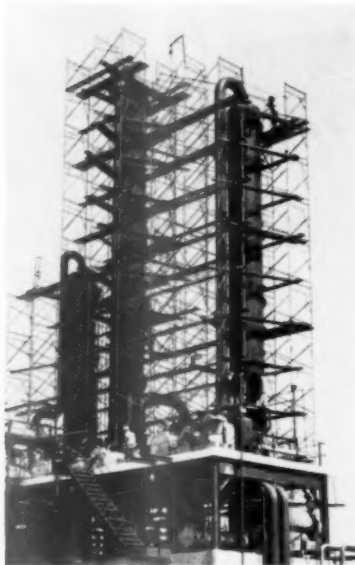
Edges and corners should be rounded to avoid damage to clothing or injury to persons.

Foot rungs shorter than the foot spread of the chair lessens possibility of tipping, particularly on the higher chairs.

A posture chair must be adjusted to the individual's need or most of its benefits will be lost. The user should also be taught to sit properly.



# Scaffolding Starts Maintenance Jobs Right for a Fast, Safe Finish



For Big Repair Jobs—"Trouble-Saver"® Sectional Steel Scaffolding provides safe, multi-level work areas for repairing structures at Koppers Co., Port Acres, Texas. "Trouble-Saver" Scaffolding is approved by Underwriters' Laboratories, Inc.



24"-Wide Ladder Scaffolds put workers at convenient height for overhead maintenance, can be easily moved, roll down narrow aisles or between machines.



More Platform Area is provided by this new 3'-wide Ladder Scaffold. Frames are 3', 5' or 6'6" high. Write for free Bulletin PSS-34.



5'-wide "Trouble-Saver" Rolling Scaffold has large platform which accommodates both workers and materials. Self-contained ladder of new economy mason frames and adjustable legs are other features.



Adjustable Trestles put workers at right height in just one, quick adjustment. No tools needed. Eight sizes for working heights from 7'4" to 18'.

## IMMEDIATE DELIVERY

Complete stocks are maintained in *your area* for immediate delivery. See the Yellow Pages in your phone directory for the nearest representative that sells or rents "Gold Medal" Ladders and Scaffolds.

## THE STEEL SCAFFOLDING COMPANY, INC.

856 HUMBOLDT STREET, DEPT. NSN

BROOKLYN 22, NEW YORK

Telephone: EVergreen 3-5510

## Section 2—Housekeeping and Maintenance

## Portable Ladders

—From page 48

safety button. Outriggers give stability.

**Chain and rope ladders** are designed for emergency use as a means of escape in case of fire or explosion, and for rescue work where rigid ladders cannot be used. These are not a substitute for permanent fire escapes.

**Crow's nest ladders.** For many outdoor maintenance jobs the "crow's nest" ladder mounted on a truck is used. It is an extension platform ladder, securely mounted on the vehicle, which can be rotated in a complete circle and elevated at angles from 45 to 72 degrees from the vertical.

This device permits working over parked vehicles and is used for tree trimming, servicing street lights, police and fire alarm signals, inspecting overhead lines, connecting house services, and general emergency work. It can be lowered into compact form for traveling.

## ACCESSORIES

**Ladder shoes.** Whenever a portable ladder is used on anything but dry ground, there is always danger of the feet slipping. To overcome this hazard, several types of ladder shoes have been devised. In general, they grip the surface, either by sharp points or by friction.

## CONDITIONS CAUSING FALLS

**Falls are the second largest cause of accidental death. Watch for these hazards:**



- Slippery, wet, oily and worn floors
- Ice and snow on walks and platforms
- Stumbling hazards
- Loose material under foot
- Worn or broken treads on stairs
- Insecure scaffolds and platforms
- Stairs, scaffolds and platforms with no handrails
- Defective ladders or ladders not suited to the job
- Open elevator shaftways
- Unguarded floor openings and manholes

NSC Safety Instruction Card No. 185

One type of sharp point is the metal spike; another is the abrasive shoe. The friction type includes those shoes which depend upon frictional resistance for the gripping qualities, such as cork, lead, and rubber or neoprene with interwoven cord.

Another type made of cotton asbestos material and interwoven wire combines the two principles. Suction cups are used in still another type.

Ladder shoes become less effective through wear, especially when exposed to oil and grease on the floor. Consequently, they should be inspected regularly.

**Stabilizers.** When a ladder is used on an uneven surface hydraulic stabilizers attached to the feet keep a ladder firm and steady. These can be attached to any straight or extension ladder.

## MAINTENANCE

**Inspection.** Among things to look for are: Loose rungs or steps; screws, bolts and other metal parts broken or missing; cracked or broken up-rights, braces, steps or rungs; slivers; worn or damaged shoes.

Defective ladders should be marked and taken out of service until defects have been corrected. If beyond repair they should be destroyed promptly.

Records of the condition of each ladder should be kept.

**Storage.** Ladders should not be stored where they will be exposed to weather, nor near radiators, stoves or steam pipes.

## PROTECTIVE COATINGS

Two coats of linseed oil or spar varnish will increase resistance to weathering.

Painting is now permitted by the ASA Code, if ladders are inspected before painting by experienced inspectors acting for the purchaser and ladders are not for resale. Transparent coatings, however, are preferred by many users.

**Wood preservatives,** which consist of toxic chemicals in non-aqueous solution, prolong the life of wood exposed to weather or in contact with the ground. They offer special protection at the joints or rung holes and tenons.

Preservatives of the NSP type (non-swelling, paintable) do not interfere with subsequent painting and varnishing.

The most disappointed people in the world are those who get what is coming to them.



Color is used in this Italian plant for functional purposes and for decoration. (Faber Birren)

## What Color Does

—From page 42

**Black and white,** in stripes or checks, are used for housekeeping and traffic markings.

**Orange** has high attention value. It is designated as the basic color for marking dangerous parts of machines or energized equipment. It emphasizes such hazards when enclosure doors are open, or when gear, belt or other guards around moving equipment are open or removed, exposing unguarded hazards.

**Blue** is for warnings, such as painted barriers, flags, etc. These should be located conspicuously at the starting point or power source of machinery.

**Purple** is the basic color for designating radiation hazards.

**Yellow** should be used with purple for markers such as tags, labels, signs and floor markers.

## IDENTIFICATION OF PIPING

Five basic colors for identification of the contents of pipes by class are specified in ASA Code A-13, Scheme for Identification of Piping Systems. Identification may be provided by stenciled legends, decalcomanias, or by one or more colored stripes.

Basic identifying code colors are:

- F. Fire protection materials and equipment ..... Red
- D. Dangerous materials..... Yellow or orange
- S. Safe materials..... Green or the achromatic colors—white, black, gray or aluminum

—To page 57



THERE ISN'T A PERSON...

ON THIS PAGE...



WHO ISN'T WORTH...



WHATEVER TIME AND TROUBLE  
IT COSTS YOU...



TO MAKE THINGS  
SAFER FOR THEM...



WHOEVER AND WHEREVER YOU ARE!

**BE CAREFUL—the life you save may be your own!**

A public service message prepared  
by The Advertising Council in coopera-  
tion with the National Safety Council.





**STRONG—STURDY—LIGHTWEIGHT**

**Daytons ARE SAFER**

The accepted standard for ladders, Dayton's are built of selected, tested kiln dried Sitka Spruce, Douglas Fir, or West Coast Hemlock. Designed in accordance with the latest specifications of the "American Standards Association Safety Code," and to meet Underwriters Laboratories Standards for Ladders.

**APPROVED AND LABELED BY UNDERWRITERS LABORATORIES**

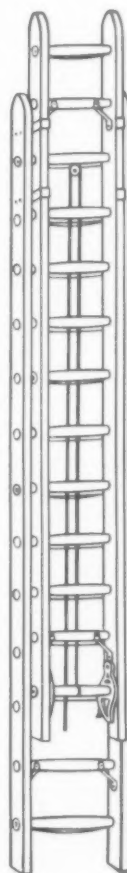


DAYTON Fig. 200 is a well constructed step ladder built for heavy industrial use to stand maximum abuse. Can be supplied with fully rodded back for extremely heavy duty jobs. Bucket rack optional. All hardware zinc plated. Sizes 4' to 16'.

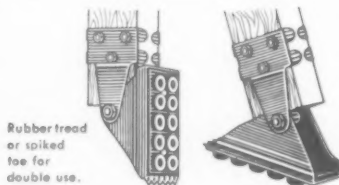


DAYTON Type A is constructed of tested airplane spruce, reinforced with rigid steel supports for great strength, lightness of weight. Handrails of steel guard large roomy platform for added safety. These famous ladders can be set up instantly, are easy to carry and fold compactly for storing. Automatic locking feature insures safety while ladder is in use. Standard rubber safety shoes no extra cost. Sizes 3' to 12' to platform.

DAYTON Fig. 102, a strong ladder for general industrial use. 1-5/16" x 2 3/4" side rails (available 1 3/8" x 3 1/4" side rails if desired—DAYTON Fig. 100). Three truss rods and four dowel braces per section for extra safety. Available with spring locks, rope and pulley if desired. All hardware is zinc plated. Sizes 16' to 40'.



DAYTON Type H, an extremely rugged type ladder, designed and built to meet the demand for a platform ladder with mill wright (rung) type back construction. Tool shelf on top. Ladder shoes standard equipment. Folds absolutely flat for easy storage. Features include pinch-proof type spreaders—corrosion resistant zinc hardware—slip proof treads. Sizes 4' to 16' to platform.



Rubber tread or spiked toe for double use.

DAYTON Safety Ladder Shoes . . . Special suction rubber tread (also in neoprene) really grips. Instantly converted for indoor or outdoor use. Base: 16-gauge steel. Side plates: 13-gauge steel. Renewable treads. Lock nuts, spring washers assure proper adjustment. Zinc plate finish.

For Free Literature, Write Dept. D.

**Dayton**

**safety ladder co.**

2339 Gilbert Ave., Cincinnati, Ohio

In Canada—SAFETY SUPPLY CO., TORONTO



## What Color Does

—From page 54

P. Protective materials...Bright blue  
V. Extra value  
materials.....Deep purple

Color may be applied the entire length of the pipe or in bands 8 to 10 inches wide near valves, pumps, and at repeated intervals along the line. The name of the specific material is stenciled in black at readily visible locations at valves, pumps, and similar places.

Color stripes painted at the edges of the color bands may also be used to identify the exact contents of lines, but this is less satisfactory than stenciled identifications. Labels for marking piping, which conform in color and size of letter to the code, are on the market.

Acids and alkalis cause some paints to change color. Paints exposed to moisture and chemical action should be carefully selected.

**Paints, enamels and lacquers** provide a medium for the practical application of color. Industrial finishes are often subject to severe exposures and many types of paint have been developed for special needs.

**Floor coatings.** Synthetic enamels and rubber base floor coatings give better service on concrete than ordinary floor enamels and are more resistant to moisture, acids and alkalis.

Light-colored floors conserve light. They may be stippled with darker colors to avoid glaring contrasts.

A painted concrete floor often seems more resilient under foot than one of bare concrete. The thin film of paint may help physically but the psychological effect is probably more important.

**Water-thinned paints.** Cold water

paints (synthetic resin and rubber base types) are satisfactory for some industrial interiors. They can be applied with spray-coating equipment. They are washable and serviceable where not exposed to weather and dampness.

Rubber base paints are more durable and will stand considerable washing.

### LUMINESCENT MATERIALS

Some types of paint, tape and plastics become luminous in complete darkness after exposure to natural or artificial light.

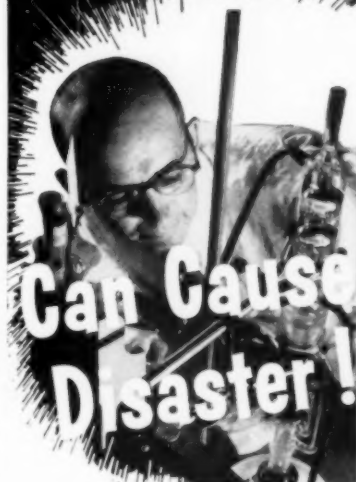
**Fluorescent materials** glow only while exposed to ultraviolet light. There is no usable afterglow. These materials are used where it is desirable for the eyes to be adapted to darkness, as in instrument dials, night flying and driving, and where electric power is available for producing light. They enable the operator to observe readings without glare or eye fatigue.

**Phosphorescent materials** glow after exposure to light and remain luminous after the light is extinguished. They are observed best under total or near-total darkness. The glow is of low intensity, suitable only for close viewing in darkness.

**Reflecting coatings** or buttons are effective where light from headlights, flashlights, cap lamps and similar sources is available.

**Rust prevention.** Paints which form a tight bond with clean metal offer considerable protection against rust and corrosion. Where rust has started, ordinary paint is ineffective because corrosion continues under the paint film. Rust-sealing coatings, both clear and pigmented, are often helpful.

## CONDUCTIVE FLOORS, IMPROPERLY MAINTAINED



insist upon a  
**conductive wax**  
bearing  
this seal . . .



Static electricity strikes without warning. The installation of conductive floors in the laboratory answers part of your safety problem . . . but only part of it. The floors must be maintained properly with safe cleaners and waxes to retain their conductivity and safety factor! Since all conventional waxes and finishes are insulators which immediately decrease conductivity and enhance the possibility of an explosion, only an accepted conductive wax should ever be applied to conductive floors!

There are only two waxes that bear the Underwriters' Label on the basis of safe electrical conductivity . . . Huntington's VC-2C and H-22 Conductive Waxes!

They are water-based waxes which produce a durable, water-resistant surface that may be polished to a luster.

Tell us the type of conductive floors you have and we'll see that you receive samples of the correct wax and cleaner for your use. We'll be glad to set up proper maintenance procedures for your conductive floors. There is no obligation.

**HUNTINGTON  
CONDUCTIVE WAXES**  
with SPAL Concentrate Detergent

Huntington  Laboratories  
Huntington, Indiana  
Philadelphia 35, Pa. • Toronto 2, Ontario

## REDUCE YOUR MAINTENANCE COSTS



### DRI-RITE WATER, OIL AND GREASE ABSORBENTS

Dries and clean floors—Absorbs water, oil and grease—Eliminates scrubbing. Prevents slipping accidents.

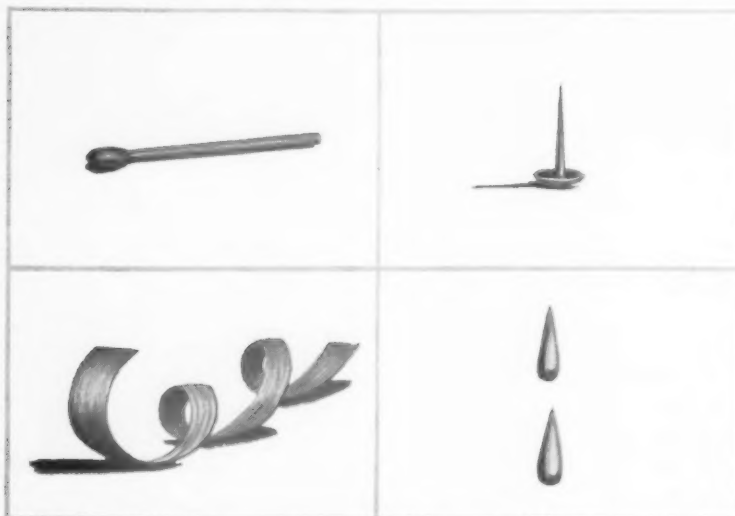
Dri-Rite quality absorbents have been proven in use by large and small industrial plants and are available to you.

Write for Samples and Information.

Manufactured by

**THE DRI-RITE COMPANY**  
100 W. Chicago Ave., Chicago 10, Ill.

## Get DRI-RITE Protection



## Which of these could cost you money?

Any one of the above could become a hazard underfoot . . . resulting in a costly slip or fall. It doesn't take much . . . a wet surface, a small piece of wood or metal underfoot . . . and the damage is done.

## **Sure-foot** PROTECTION IS ECONOMICAL . . . LONG-LASTING!

When you paint Sure-Foot on floors, stairs and manufactured products, you paint on protection . . . economically. One application covers. Sure-Foot is brush-applied like ordinary paint and comes ready for application right out of the can. It flows quickly and easily . . . dries overnight to

a tough, hard, non-skid surface. Millions of carbide crystals give Sure-Foot its long-wearing abrasive quality . . . provide sure-footed, dependable traction under all conditions. Comes in five eye-easing colors . . . gray, red, black, traffic yellow and green.

**EASY TO APPLY PAINT IT ON . . . INSIDE OR OUT!**

**PROVIDES PERFECT TRACTION ON WET OR DRY SURFACES**

# **Sure-foot**

**non-slip abrasive floor coating**

### SURE-FOOT DISTRIBUTORS

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MINNEAPOLIS 13, MINNESOTA  
**FREE—Write for Sure-Foot Bulletin 3-2**

## Plan Plants for People

—From page 20

overpass will avoid congestion and delay in getting to and from the plant.

Some companies bring buses right into the plant. The buses are driven down a ramp to a central location. From there employees reach their jobs through passages below the main production floor.

**Parking.** The parking lot should receive consideration in all plans. If it is necessary to cross a busy thoroughfare to reach it, an underpass or bridge may be needed. Separate entrance and exit facilities should be provided.

Guides and marking aid in proper use of the parking area.

## BUILDING TRENDS

Constantly rising construction costs are stimulating the search for economical materials and methods. Newer building materials, which meet severe performance tests, are sometimes barred by local building codes. Work on standardization of building codes is being conducted by the American Standards Association and other organizations.

**One-story plants** are preferred in many locations where land values are not excessive and there is plenty of room for expansion. Advantages claimed for one-story construction are:

- Lower construction costs.
- Freedom from stairs and elevators.
- Ease in routing and handling heavy and bulky equipment.
- Better lighting and ventilation.
- Ease in isolating hazards.
- Efficient handling of material.
- Ease of supervision.
- Lower operating and maintenance costs.
- Possibilities for pleasing architecture and landscaping.

**Roofs.** Flat roofs or those with few projections, reduce construction costs. Monitor and sawtooth constructions are becoming less popular although they are effective in admitting natural light to the center of the building. With modern light sources simulating natural light, daylight has become less important.

## MATERIALS HANDLING

Materials are moved in and out of the plant by railroad, highway, water, and sometimes air. More than two of these methods are seldom needed.

Loading docks should be planned for traffic both outside and within the plant.

Studies of flow of materials through the plant, from the time they are received, through processing, until they are shipped out as finished products, often reveal ways to eliminate unnecessary handling as well as hazards.

Adequate clearances between vehicles and fixed structures must be provided. This is particularly important in laying out plant railways and driveways.

### MACHINE LAYOUT

**Space.** Each operator should be able to move to, sit at, stand at, and move safely about his machine, bench, conveyor, hopper, desk, or other equipment where he works.

He must be able to get into that space without slipping, bumping objects, striking overhead objects, or coming into contact with live electrical parts, or moving parts of machinery.

He must have room to move material being processed. At machine tools he must have space for hoists, lifts, or hand or power driven trucks.

In continuous line operation, where machines are frequently served by conveyors, little or no intermediate storage space for materials is necessary. In other types of operation added space for storage of raw and finished materials is essential.

Insufficient headroom is often a hazard. "Temporary" installations of pipe lines, equipment supports, overhead conveyors and other installations that might cause head bumps can often be avoided. Elevation drawings should be studied to determine the exact location of equipment that might cause trouble.

Vertical clearance of at least 7 feet should be provided, especially over aisles, passageways and stairways. Where this is not practicable, overhead obstructions should be marked by contrasting paint or should be padded.

**Storage space** must be adequate to avoid confusion, bad housekeeping, fire hazards, overloaded floors, and damage to stock.

Supplies, tools, safety equipment, small parts, and equipment not used regularly should receive attention. Maintenance is facilitated when such items as personal protective equipment, ladders, and hoisting equipment are readily available.

**Safe access** to all parts of the plant should be provided.

Stairways are first choice where conditions permit.

Fixed ladders may be used where space is limited.

Portable ladders are acceptable only when the need for access is relatively infrequent.

Stairs for general use should be convenient to the areas served. They should be equipped with standard handrails and there should be no obstructions at top or bottom.

**In-plant traffic.** Planning for the movement of power trucks and tractors, hand trucks and tractors in and about buildings requires provision for adequate clearance in aisles, corridors, passageways, and at corners and curves.

**Aisles** should be wide enough to permit trucks to pass without crowding and without endangering persons working at machines.

Sufficient width should be maintained for movement of fire apparatus.

For one-way traffic, aisles should be not less than two feet wider than the widest vehicle loaded.

For two-way traffic, aisles should be not less than three feet wider than twice the width of the widest vehicle loaded.

Clearance must be provided for overhead cranes and conveyors. At least 24 inches of clearance should be allowed the highest points of cranes and overhead trestles and other overhead fixtures. Also, 24-inch clearance should be allowed between any part of the crane and wall, column or other stationary structure.

Cross aisles should be avoided at tops and bottoms of ramps and inclines. If possible, aisle and ramp should be in a straight line.

**Pedestrian traffic.** Aisles should be proportionately wider to accommodate rush traffic to such points as time clocks, lunchrooms and exit gates. Main aisles up to 20 feet wide and cross aisles not less than 8 feet wide are desirable.

Where foot traffic parallels railways or other fixed-track carriers, adequate clearance should be provided to allow the aisle edge to be marked by a conspicuous line on the floor.

Aisles should be clearly marked by painted lines or other marking.

Gates, warning signals or signs, and barricades should be provided. Where traffic is heavy, underpasses and overpasses for both vehicular and pedestrian traffic should be considered.

# UP!

# UP!

# UP!

## TO ANY DESIRED HEIGHT

**EASILY . . .**  
**SAFELY . . .**  
**ECONOMICALLY**  
**HI-LIFT**  
**EXTENSION**  
**SCAFFOLD**

Models extend from 6 ft. 10 in. (can be made lower) to any desired height. Hand or electrically operated. Comes to you ready for work — no erection required, no loose parts. Built to meet individual requirements. Ideal for painting, lighting, cleaning, and all overhead maintenance. Pays for itself in time and labor saving.

Also Makers of  
**HI-LIFT PORTABLE WORK PLATFORM**  
 and  
**ATLAS PORTABLE LOADING PLATFORM**

Write for  
**Complete Information**

**ATLAS**  
**INDUSTRIAL CORP.**  
 866 39th Street  
 Brooklyn 32, N. Y.



# YOU CAN'T MISS..

with CUSTANITE Flex-Flo® SAFETY HAMMER

*guaranteed...*



- WON'T MUSHROOM
- WON'T SPARK
- WON'T FLY OFF

... to outlast them all ... for greater  
**SAFETY, ECONOMY and EFFICIENCY**  
**REDUCES ACCIDENTS — LOWERS COSTS.**  
FIT THE JOB with choice of sixteen sizes,  
Five Functioneered alloy hardnesses.

Hollow-Head Design

with  
exclusive



**"CONTROLLED  
COMPRESSION"**

U.S. Pat. No. 2,704,094

**SLIPRUF**

SECURE-GRIP COATING

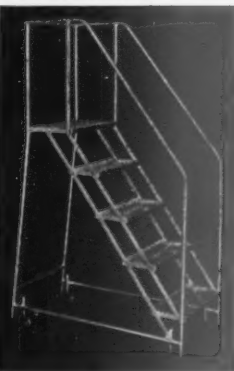
Prevents that costly  
accident. Provides a  
firm traction surface  
for tool handles, etc.  
Better grip means  
safer work.

Recommended by Safety Engineers



**THE CUSTANITE CORPORATION**

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## COTTERMAN Welded Steel SAFETY LADDERS

For Filing Rooms—Stock Rooms—Vaults

**SAFE—STRONG—EASY TO MOVE**

**EASY TO CLIMB—NON-SKID STEPS**

Frame work made from heavy gauge 1" diameter round  
steel furniture tubing, with all joints electrically welded.  
Mounted on Swivel Brake Casters which allow the ladder  
to be rolled freely when no one is on it. When you  
step on the ladder the rubber cushioned legs rest on the  
floor and prevent rolling.

Made in 13 heights—from 12" 1 Step to 117" 13 Step, and  
in 4 widths—18", 20", 26" and 32", with and without hand  
and platform rails.

### COTTERMAN TRUCK-N-LADDER TRUCK AND LADDER COMBINED IN A SINGLE UNIT

It is no longer necessary to buy two separate  
units—you have both in one unit. Saves half  
the operator's time—he moves both truck and  
ladder at the same time. Good for stock pick-  
ing, material handling or maintenance work.  
One man operation.

The steel truck with three or more shelves has  
5" heavy duty rubber tired wheels—2 swivel  
and 2 stationary.

The ladder is our regular Welded Steel Safety  
Type with the same Swivel Brake Casters, steel  
tubing frame and expanded metal steps. Hand  
Rails are provided as well as a safety knee bar  
to give the greatest amount of safety. Several  
ladder and truck heights are available.

Write for Folder No. 56-N for complete infor-  
mation on our Welded Steel Safety Ladders and  
Truck-N-Ladders, and Folder No. 42-N on our  
full line of Wood Rolling Ladders.

Manufactured by **I. D. COTTERMAN**  
4535 N. Ravenswood Ave., Chicago 40, Ill.



## Multi-Tenant Buildings

A company which shares a build-  
ing with other tenants, must submit  
to restrictions which do not confront  
companies which have sole occu-  
pancy. Fellow tenants and the build-  
ing management, as well as the com-  
pany's own personnel, must be con-  
sidered.

Tenants of these buildings are  
usually smaller concerns engaged in  
mercantile and light manufacturing  
operations. Often the buildings are  
located in built-up districts. Traffic  
and parking may cause difficulties.

Zoning regulations restrict some  
operations. Secure approval of  
buildings and facilities.

Mutual responsibilities for main-  
tenance and services should be  
understood by tenant and manage-  
ment.

The following should also be  
checked:

1. **Floor load capacity**
2. **Plant protection**  
Type of building construction  
Exits  
Fire alarms and fire-fighting  
apparatus  
Emergency lighting equipment  
Watchman service  
Proximity to hazardous opera-  
tions
3. **Electric wiring.** Is it adequate and  
safe for light and power re-  
quirements?
4. **Ventilation and exhaust.** Precau-  
tions must be taken to protect  
health of employees and avoid  
creating a public nuisance.
5. **Elevators.** Location and provision  
for operation and maintenance.
6. **Personal service facilities**  
Wash and rest rooms  
Neighboring restaurants and  
possibilities for in-plant feed-  
ing.
7. **Public transportation and park-  
ing.**
8. **Possibilities for expansion.**

The output per man-hour in the  
U. S. during this century has in-  
creased at the rate of about two  
per cent a year. Compounded,  
this means that every 35 years,  
productivity doubles. One hour  
of a man's effort today produces  
twice as much as one hour of his  
father's much more strenuous ef-  
fort. Fifty years ago, machines  
provided less than half the power  
used for work. Today, they sup-  
ply 95 per cent of the energy  
required.



# COMING EVENTS



in the  
safety field

Mar. 4-6, Atlanta, Ga.

Southern Safety Conference and Exposition (Biltmore Hotel). W. L. Groth, executive director, P.O. Box 8927, Richmond 25, Va.

Mar. 7-8, Philadelphia

Twenty-second Annual Philadelphia Safety and Fire Conference and Exhibit (Broadwood Hotel). Walter W. Matthews, managing director, Philadelphia Safety Council, 121 S. Broad St., Philadelphia 7.

Mar. 9, Berkeley, Calif.

Fourth Annual Eastbay Public Safety Congress (Hotel Claremont). Clinton W. Dreyer, managing director, Eastbay Chapter, National Safety Council, 1322 Webster St., Oakland 12, Calif.

Mar. 13-15, Buffalo, N. Y.

Sixteenth Annual Western New York Safety Conference (Statler Hotel). T. E. Gismondi, P. E., executive secretary, Western New York Safety Conference, 1430 Delaware Ave., Buffalo 9, N. Y.

Mar. 19-20, Boston

Thirty-fifth Annual Massachusetts Safety Conference (Hotel Statler). Sponsored by the Safety Councils of Massachusetts. Bert Harmon, activities director, Massachusetts Safety Council, 31 State St., Boston 9.

Mar. 19-21, Los Angeles

Third Annual Southern California Safety Congress and Exhibit (Ambassador Hotel). Joseph M. Kaplan, secretary-manager, Greater Los Angeles Chapter, National Safety Council, 610 S. Main Street, Los Angeles 14.

Mar. 26-27, Dallas, Tex.

Seventeenth Texas Safety Conference and the Governor's Highway Safety Conference (Baker Hotel). J. O. Musick, general manager, Texas Safety Association, Inc., 830 Littlefield Bldg., Austin, Tex.

Mar. 28-29, Indianapolis

Ninth Central Indiana Safety Conference and Exhibit (Claypool Ho-

## New DRY TAMP PERMA<sup>Mix</sup> Floor Patch

Don't stop traffic to repair floors—use Permamix, the new all-temperature DRY TAMP floor patch.



**DRY TAMP MEANS SPEED** • No sticky mass to dig out of the drum or to handle • Permamix dry pours • sets instantly • feather edges perfectly • no production delays • non-skid surface.



**ALL TEMPERATURE** • Won't freeze • can be stored or used in any temperature • will store indefinitely • a stock room item • will not "set" in drum whether open or covered. Mistakes just can't happen. Tamp in place and traffic rolls.



**CUTS MAINTENANCE COSTS** on concrete, brick, tile or asphalt floors • no special equipment or skill needed • a one man job • comes in durable 50 lb. net wt. fibre drums • solve your floor patching problems for good.

Write for Details Now!

**PERMAMIX CORPORATION**

155 W. WACKER DRIVE

CHICAGO 1, ILLINOIS



**STOP COSTLY FALLS...THIS QUICK!**

## Make your plant safer with "SAFETY-WALK"

Here's the new mineral-coated fabric that provides perfect traction—sure footing—even under water or grease! Patterned in strips, tiles and cleats for a variety of purposes, it goes on in minutes—lasts for years. And it's easy to

keep clean! Use "Safety-Walk" Non-slip Surfacing on stairs, walkways, ramps—wherever the danger of a fall is present. "Safety-Walk" pays off in accident prevention, better public and employee relations... prevents costly claims.

REG. U.S. PAT. OFF.  
**SAFETY-WALK**  
BRAND  
**WETORDRY NON-SLIP SURFACING**  
REG. U.S. PAT. OFF.

Made in U.S.A. by MINNESOTA MINING AND MFG. CO., St. Paul 6, Minn. Also makers of "SCOTCH" Brand Pressure-Sensitive Tapes, "3M" Abrasives, "3M" Adhesives. Export Sales Office: 99 Park Avenue, New York 16, N.Y. In Canada: P.O. Box 757, London, Ontario.



**FREE SAMPLE!** Please send me "Safety-Walk" sample and complete information.

Minnesota Mining and Mfg. Co.  
Dept. LB-36, St. Paul 6, Minn.

NAME.....

COMPANY.....

ADDRESS.....

CITY.....ZONE...STATE....

tel). Jack Gunnell, director, Indianapolis Safety Council, c/o Chamber of Commerce, 320 N. Meridian St., Indianapolis 11.

**Apr. 4-6, Huntington, W. Va.**

Twenty-second Annual State-wide Safety Conference. Charles Hopkins, managing director, West Virginia Safety Council, Masonic Bldg., Charleston, W. Va.

**Apr. 5-7, Klamath Falls, Ore.**

Forest Products Safety Conference. Charles Houston, personnel manager, Weyerhaeuser Timber Company, Klamath Falls, Ore.

**Apr. 9-10, Toronto, Ont.**

Industrial Accident Prevention Associations Annual Conference (Royal York Hotel). R. G. D. Anderson, general manager, 90 Harbour St., Toronto 1, Ont.

**Apr. 10-11, Fort Wayne, Ind.**

Thirteenth Annual Northeastern Indiana Safety Conference and Exposition (Chamber of Commerce Building). Sponsored by the Industrial Safety Committee of the Fort Wayne Safety Council. Ivan A. Martin, manager, Fort Wayne Safety Council, Chamber of Commerce of Fort Wayne, Fort Wayne 2, Ind.

**Apr. 10-12, St. Louis, Mo.**

Central States Safety Conference (Hotel Chase). Reyburn Hoffman, secretary-manager, The Safety Council of Greater St. Louis, 511 Locust St., St. Louis, Mo.

**Apr. 10-12, Pittsburgh, Pa.**

Western Pennsylvania Safety Council, Inc. Spring Conference (Hotel William Penn). R. S. Poister, general chairman, Western Pennsylvania Safety Council, Inc., 605 Park Bldg., Pittsburgh 22, Pa.

**Apr. 16-20, New York**

Twenty-sixth Annual Greater New York Safety Convention and Exposition (Hotel Statler). Paul F. Stricker, executive vice-president, Greater New York Safety Council, 60 E. 42nd St., New York 17.

**Apr. 17-19, Cincinnati, Ohio**

Twenty-sixth All Ohio Safety Congress and Exhibit (Netherland Plaza Hotel). A. W. Moon, congress manager, The Industrial Commission of Ohio, Columbus 15, Ohio.

**Apr. 24-26, Detroit, Mich.**

Twenty-sixth Annual Michigan Safety Conference. (Sheraton-Cadillac Hotel). Bayard A. Clark, executive secretary, Michigan Safety Con-

ference, c/o Automobile Club of Michigan, Detroit 26, Mich.

**Apr. 30-May 4, Battle Creek, Mich.**

Second Federal Civil Defense Administration Staff College Course for Industry Defense (FCDA National Headquarters). W. Gayle Starnes, director, Staff College Federal Civil Defense Administration, Battle Creek, Mich.

**May 2-4, Charlotte, N.C.**

Twenty-sixth Annual North Carolina Statewide Industrial Safety Conference (Charlotte Hotel). H. S. Baucom, director of safety, North Carolina Industrial Commission, Raleigh, N.C.

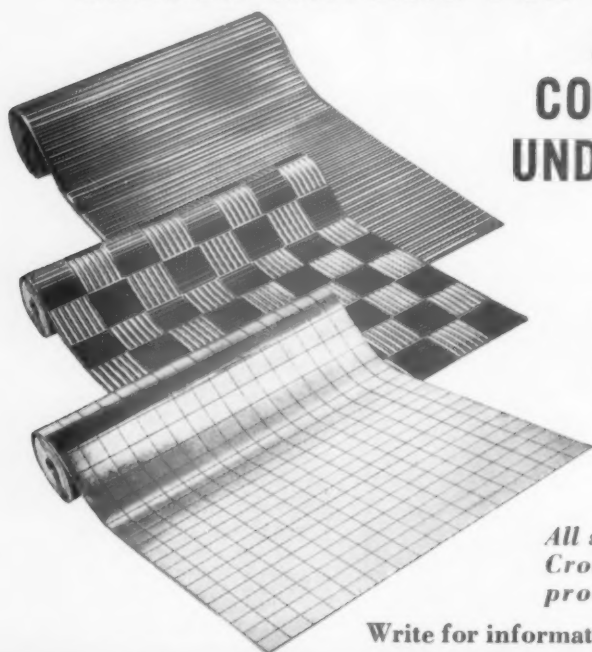
**May 7-9, Allentown, Bethlehem, Easton, Pa.**

Twenty-ninth Annual Eastern Pennsylvania Safety Conference. Harold A. Seward, secretary-treasurer, Lehigh Valley Safety Council, 602 E. Third St., Bethlehem, Pa.

**May 10-11, Baltimore, Md.**

Governor's Safety-Health Conference and Exhibit (Lord Baltimore Hotel). Joseph A. Haller, executive director, Department of Labor and Industry, State of Maryland, 12 East Mulberry St., Baltimore 2, Md.

## RUBBER MATTING FOR INCREASED SAFETY AND COMFORT UNDERFOOT



Durable, live rubber matting for industrial assembly lines. Increased traction reduces slipping and prevents accidents.

**Wear Proof Mats pictured are:**

**Top: Cross-Rib Runner**  
**Center: Shad-O-Rug**  
**Bottom: Tile Runner**

*All styles available in Black, Red and Green. Cross-Rib Runner in chemical and grease proof NIRU in White and Grey only.*

**Write for information and name of your nearest distributor.**

# WEAR PROOF MAT CO.

2156 W. FULTON  
CHICAGO 12, ILLINOIS

**May 14-16, Washington, D. C.**

Fifth President's Conference on Occupational Safety. Paul E. Gurske, director, Bureau of Labor Standards, U. S. Department of Labor, Washington 25, D. C.

**May 17-18, Duluth, Minn.**

Thirty-second Annual Conference, Lake Superior Mines Safety Council (Hotel Duluth). John A. Johnson, secretary, c/o U. S. Bureau of Mines, Federal Bldg., Duluth 2, Minn.

**May 17-18, Toronto, Ont.**

Annual Conference, Mines Safety Association of Ontario (Royal York Hotel). C. Gibson, safety director, Mines Safety Assn. of Ontario, 67 Pine St. South, Timmins, Ont.

**May 22-24, Rochester, N.Y.**

First Genesee Valley Safety Conference and Exposition. Sponsored by Rochester Safety Council; Genesee Valley Chapter, ASSE, and Industrial Management Council of Rochester. William H. Keeler, secretary-treasurer, Genesee Valley Safety Conference, Inc., 55 St. Paul St., Rochester 4, N.Y.

**June 4-8, Boston**

Sixtieth Annual Meeting, National

Fire Protection Assn. (Hotel Statler). Robert W. Schuette, manager, Public Relations, NFPA, 60 Battery-march St., Boston 10.

**June 5-6, Hartford, Conn.**

Eleventh Annual Conference of the Connecticut Safety Society (Hotel Statler). Stephen J. Pollock, Jr., manager, c/o Remington Arms Co., Inc., 939 Barnum Ave., Bridgeport, Conn.

**Sept. 13-14, York Harbor, Me.**

Twenty-ninth Annual Maine State Safety Conference (Marshall House). Arthur F. Minchin, secretary, Department of Labor and Industry, State House, Augusta, Me.

**Oct. 22-26, Chicago**

Forty-fourth National Safety Congress and Exposition (Conrad Hilton Hotel). R. L. Forney, secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11.

**Wisconsin Conferences**

March 21—Canners' Safety Institute, Madison.

April 13—Foreman's Safety School, Milwaukee.

April 19—Southwest Regional, Richmond Center.

May 10—Fox River Valley and Lakeshore, Appleton.

May 11—Foreman's Safety School, Milwaukee.

May 17—Rock River Valley Safety Conference, Beloit.

May 24—Southeast Lakeshore, Burlington.

June 1—Foreman's Safety School, Milwaukee.

June 8—Northwest Regional, Ashland.

June 12—Wisconsin River Valley, Merrill.

For information about Wisconsin Conferences and safety schools write R. W. Gillette, executive secretary-treasurer, Wisconsin Council of Safety, 1 W. Wilson St., Madison 2, Wis.

**White House Conference**

The following regional meetings on highway safety have been scheduled. For information, contact J. W. Bethea, The President's Committee for Traffic Safety, General Services Building, Washington 25, D. C.

**May 1-2, Atlantic City, N. J.**

Eastern Regional Conference (Hotels Ambassador, Ritz, Chelsea) Training Conference for staff—April 29 and 30.

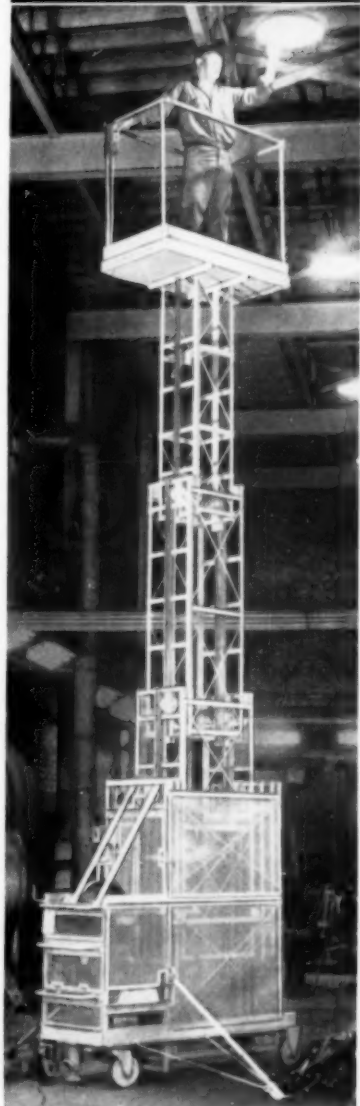
**May 14-15, Miami Beach, Fla.**

Southern Regional Conference

**THE MAN WHO FEELS SAFE WORKS BETTER**

**Economy**  
**HI-REACH**  
**TELESCOPER**

**ENGINEERED FOR STRENGTH  
STABILITY AND SAFETY**



Safety is our first consideration in building Hi-Reach Telescopers.

During the past quarter of a century of making Hi-Reach Platform Telescopers, our engineers have constantly improved the mechanical construction to obtain maximum stability, smooth time-saving lifting action, and safety.

Standard Models available from 10'-9" to 35 ft. high, and custom-built units as high as 100 ft. if you like.

**ECONOMY ENGINEERING CO. EST. 1901**  
4518 W. Lake St., Chicago 24, Ill.

**Accepted Procedure...**

against  
**Athlete's foot**  
with modern  
**DOLGE Fungicides**

**DUSTING** Alta-Co Foot Powder on the feet and inside shoes

**FOOT BATH** Alta-Co Powder dissolved in water for group prophylaxis

**FLOOR WASH** H.D. Fungicide diluted in 300 parts water—mop on floor

Write for  
Booklet on  
Athlete's Foot  
Control

**DOLGE**  
WESTPORT, CONNECTICUT

**THAT'S ENOUGH  
YOU'RE USING  
CAL-FLOR-DRY NOW!**



REG. U.S.  
PAT. OFF.



**YES, THE BIG FEATURE OF CAL-FLOR-DRY IS—  
A LITTLE GOES A LONG WAY.**

CAL-FLOR-DRY absorbs 120% of its own weight in grease, liquids, and oils, including soluble. Maintenance and safety engineers in many industries over the years find Cal-Flor-Dry costs less and does the most thorough job.

Cal-Flor-Dry is habitually used to keep these surfaces dry and safe:

Floors	Docks	Elevator	Grease
Stairs	Benches	Pits	Racks

Cal-Flor-Dry does not ball-up, nor mush-down when wet. It is non-abrasive, safe on machinery.

Cal-Flor-Dry is habitually used in:

Machine Shops	Service Stations	Railroad
Bulk Oil Plants	Ship-Yards	Repair Shops
Garages	Mills	Printing Plants

**THERE'S A WAREHOUSE STOCK NEAR YOU: WRITE FOR  
FULL DESCRIPTIVE LITERATURE.**

**The FLOR-DRY Company**

1821 UNIVERSITY AVE.  
DOCK 3  
ST. PAUL 4, MINN.



- Save Trucks
- Save Docks
- Prevent Damage

**DURABLE** resilient rubber Loading-Dock Bumpers absorb the BUMP when truck and dock come together—

- Prevent damage to truck bodies.
- Eliminate replacement of dock timbers.
- Protect fragile freight—reduce claims.
- Easy to install.

Send for complete information.

**DURABLE MAT COMPANY**

75 N. Pleasant St., Norwalk, Ohio  
755 Kifer Road, Santa Clara, Calif.

(Hotels Saxony, Sans Souci, Sea Isle, Seville). Training Conference for staff—May 13.

May 23-24, Chicago

Midwest Regional Conference (Hotel Sherman), Training Conference for staff—May 22.

June 1-2, San Francisco

Western Regional Conference (Sheraton-Palace Hotel). Training Conference for staff—May 31.

## Schedule Second Civil Defense Course

With industry assuming a leading role over the past 40 years in developing increased safety for its people, it is logical to expect that industry would likewise play an important part in the development and organization of effective civil defense planning and training.

Many companies are already active in CD programming; others have not taken direct steps in this direction, but find that efforts toward fire prevention and protection, security measures, and mutual aid plans for help in combating natural disaster, such as flood and hurricane, produce many of the ingredients essential to a good civil defense program. These include organization, planning, trained manpower, and the marshalling of required equipment. Not too much extra effort should be required to expand such activity so that it might be woven into the fabric of the community, area, state, and national defense program.

The Federal Civil Defense Act of 1950 (Public Law 920—81st Congress) declares that "It is the policy and intent of Congress to provide a plan of civil defense for the protection of life and property in the United States from attack." To this end, the Federal Civil Defense Administration assists, guides, and coordinates.

To carry out a part of its responsibility, the FCDA has set up a Staff College Course for Industry Defense, conducted at its national headquarters in Battle Creek, Mich.






**SKID-PROOF SAFETY ENAMEL**  
**will STOP those slipping**  
**ACCIDENTS**

**Convoy**

**YOU CAN SPRAY IT — ROLL IT — OR BRUSH-IT-ON**  
**30 DAY MONEY BACK GUARANTEE**

**COLORS**—Tile Red, Lt. Gray, Dk. Gray, Yellow, Green, Black, White. Contact Your Safety Equipment Supplier or Write Us for Bulletin and Color Card.

**CONVOY DIVISION — KELLEY-MAHONEY CO.**  
 1445 S. 15th ST., LOUISVILLE 10, KY.



**SPECIFY**  
**Johnson Ladder Shoes**  
**for Safe Climbing**



**ALL RUBBER**  
**ANKLE ACTION**  
**Always Flat at Any Angle**

Standard Equipment in  
 Thousands of Plants everywhere

**JOHNSON**  
**LADDER SHOE CO.**  
 EAU CLAIRE, WIS.

The course includes special detailed instruction in methods and techniques of preparing for self-help in industrial plants, institutions, and other large facilities, with orientation in all aspects of civil defense planning, organization, and operation.

The first of these courses was held November 28 through December 2, 1955. The second course is scheduled for the week of April 30 through May 4, 1956.

Attending the November 28 course were 63 representatives of a diversified cross section of private industry and government services (see table) covering a variety of primary job interests, from direct protection and security functions through safety, production, sales, and staff administration. The National Safety Council was represented by Howard H. Warzyn, Industrial Department. The course is conducted under the general direction of W. Gayle Starnes, director of the Training and Education Office by a corps of 10 instructors under the leadership of Virgil L. Couch, director of the Industry Office, and Dr. Leon H. Weaver, senior instructor.

In addition, special interest subject sessions were conducted by representatives from Esso Standard Oil, Ford Aircraft, and General Electric, as well as from the Department of Defense and the Department of Commerce, Business and Defense Services Administration.

The diversified activities represented at the first FCDA college course for industry defense is shown by the following attendance figures:

Aircraft .....	6
Automotive .....	4
Commercial .....	2
Electrical Equipment .....	3
Federal Government Services .....	18
Medical Supply and Chemical Manufacturers .....	3
Metals Manufacturers and Fabricators .....	5
Municipal, County, and State Agencies .....	5
Petroleum .....	2
Private Agencies for Public Service .....	2
Public Utilities .....	12
Rubber .....	1

**Making the Best of  
 The Night Shift**

**ALTHOUGH** a few workers prefer the night shift for personal reasons, night operations generally are regarded as a necessary evil by both management and employees.

Most workers resent it because it upsets their natural habits of sleeping and eating and because of the

**4**  
**REASONS WHY**  
**YOU WIN WITH**  
**SAFE-LAD**



**SAVES MONEY.** Use of this mobile ladder truck in the maintenance zone from 7 to 14 feet saves up to 50% over former methods.

**MORE EFFICIENT.** Safe-Lad rolls to job easily—on regular elevators—through standard doors. Large base tray for equipment and supplies. Handy-reach top tray for speeding up maintenance work.

**STURDY.** All steel construction, are welded for strength.


**SAFE.** Automatic safety control locks Safe-Lad in fixed position when operator touches first step. Waist-high guard rail provides 4-way protection at all heights—frees both hands.

For complete specifications, write—

**SAFE-LAD**  
*Manufacturing Company*

1003 S. E. Morrison • Portland 14, Oregon

**Keep your floors  
FREE of SLIPPERY  
OIL SPOTS**




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**Oil-Dri®  
ABSORBENTS**

the modern, economical oil  
and grease absorbents that  
keep your floors dry, clean  
and safe, and reduce main-  
tenance costs.

WRITE TODAY FOR FREE  
60-SECOND DEMONSTRATION

**Now Available!**

Handy  
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DISPENSER**



Located on spot  
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Slot-type re-  
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cally delivers  
absorbents to  
floor of dispenser. Easy to dis-  
pense with  
shovel — no  
waste — saves  
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## HAZARD SPOT CARD

For Job Planning and Instruction

### WORK AREA

- Footings: uneven ☐ obstructed ☐ slippery ☐
- Cramped quarters ☐
- Exposure to traffic ☐
- Insecure piles or overhead material ☐
- Inadequate illumination ☐ glare ☐
- Temperature: too hot ☐ too cold ☐
- Exposure to gases ☐ dust ☐ fumes ☐
- Hazards from nearby operations ☐

### MACHINERY

- Point of operation: cutting ☐ shearing ☐
- punching ☐ abrading ☐ flying material ☐
- Power transmission: shafts ☐ belts ☐
- gears ☐ pulleys ☐ electrical conductors ☐
- Unsafe starting and stopping mechanisms ☐

### TOOLS

- Wrong tool for the job ☐
- Tool in unsafe condition ☐
- Tool placed in unsafe position ☐

### HANDLING MATERIAL

- Material or objects: heavy ☐ unwieldy ☐
- rough ☐ sharp ☐ hot ☐ corrosive ☐
- Unsafe handling equipment: trucks ☐
- conveyors ☐ hoists ☐ containers ☐

NSC Safety Instruction Card No. 775

disruption of family and social life. The small extra pay for night work does not compensate for its disadvantages.

Rotation of shifts is followed in most companies which operate multiple shifts.

Most employees realize that taking their turn on the night shift is necessary but they feel that management could improve working conditions.

With modern lighting systems, illumination of the work places is usually at the same level day and night for most operations. Food service, first aid facilities and transportation are conspicuous among the difficulties.

**Food service.** When the full force is not maintained at night, the cost of operating the cafeteria is excessive. As a result, workers bring their own food, not always a balanced meal, with a soft drink from the vending machine. This, on top of the change of living habits, is said to cause a high percentage of digestive troubles among night workers.

Workers in some plants have facilities for making coffee, with the company supplying the gas or electric plate. Others have rolling canteens. Vending machines can supply milk and hot beverages and some of the more elaborate machines dispense hot foods.

Box lunch services are available at all hours in some localities and

neighborhood diners and restaurants will sometimes send in food and coffee on order.

**Medical care.** Furnishing adequate medical care at night is another problem, especially when only a few men are employed. Where night operations are on a large scale, nurses and doctors are often on duty.

Where this is not practicable, first-aid service must be given by trained laymen, frequently the plant guards. Sometimes a doctor visits the plant at night to check first-aid facilities and give physical examinations.

**Transportation.** Infrequent bus service at night is another problem for employees who are unable to take advantage of car pools. Often management is able to make some arrangement with the transportation company by guaranteeing a minimum number of riders.

Sometimes it is possible to lay out special routes for buses if a number of workers are living in certain areas. This is appreciated by women on night duty who are, with good reason, afraid to go home alone. On special occasions when women have to work beyond their regular shift, some companies pay their taxi fare.

## STOP THAT FALL



## Safety Lifeline Lock

### FOR SCAFFOLDS AND SWINGS

Locks automatically, instantly. Slips onto lifeline rope. Moveable up or down with man. Instant locking position at all times, whether stationary or being moved up or down.

Snap into safety belt; No adjusting. Inexpensive. Over-all length approx. 13". Does not harm rope. Weight: approx. 5 lbs.

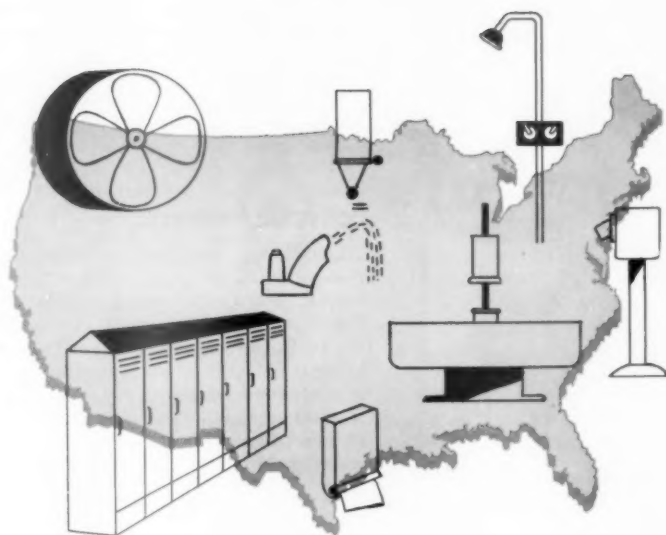
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# INDUSTRIAL HEALTH ENGINEERING



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**O**CCUPATIONAL health problems have become extremely complex. New processes and new materials have brought a variety of harmful and suspicious exposures and a new science—industrial health engineering. It has been described as a combination of sanitary, chemical, and mechanical engineering.

Harmful exposures include dusts, gases, vapors and other air contaminants, extremes of temperature, radiant energy, and noise.

The industrial hygienist is a valuable ally of the safety department and the medical department. He is concerned with all factors which have a long range influence on health, even when they involve no immediate and drastic menace to health. His interests include those items known as employee services, such as sanitary facilities, food services, and drinking water.

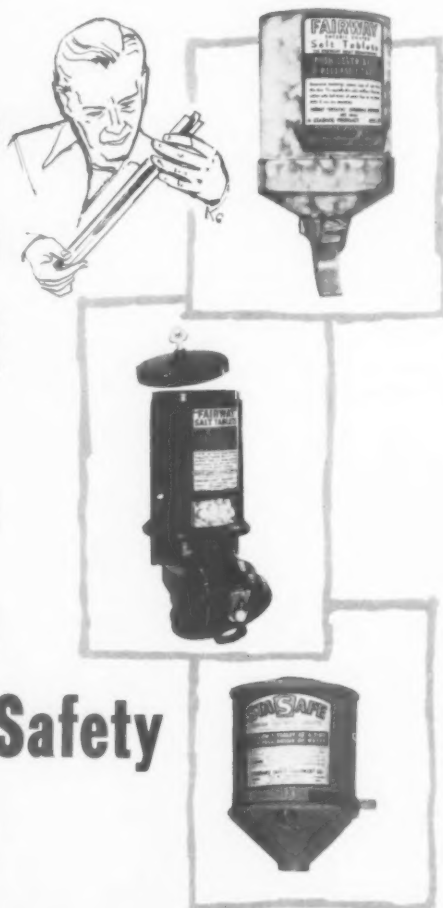
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# VENTILATION

**VENTILATION** has been defined as providing general air requirements for the health and comfort of occupants of an enclosed space. Providing these requirements may be complicated by the generation of nuisance or toxic air contaminants in the industrial processes.

Ventilation problems are not confined to building interiors. In many areas, by-products of combustion and toxic or nuisance gases and dusts cannot be vented to the outside without treatment to make them safe and unobjectionable. Air pollution is currently receiving much study from industrial and public health organizations.

A workplace can be ventilated by either natural or artificial means. Only in favored climates and in a few industries are natural methods likely to be adequate.

Ventilating systems are based on one of two general principles:

- Plenum ventilation. Air is driven into the room by fans, diluting the room air with fresh air, forcing out some of the stale air through doors, windows, cracks and crevices. This method has definite limitations.
- Exhaust (vacuum) systems. Air is drawn from a room by means of fans. Air to replace it enters the room through doors, windows and other openings because of a slight reduction of air pressure in the room.

## GENERAL VENTILATION

Where processes are not injurious to health, general ventilation is usually satisfactory. It is also satisfactory where dilution of air contaminants will keep the concentration below permissible limits for continuous exposure.

Where toxic materials are handled, removal of contaminants at their source is necessary.

Ventilation is often complicated by the necessity of maintaining a comfortable temperature. Exhausting impure air is usually practicable but in cold weather it may be difficult and expensive to warm large volumes of incoming air.

**Natural ventilation** is adequate for some buildings housing non-hazardous operations. Air circulation is aided by doors, windows, roof ventilators and monitors. The number of outlets should be planned for hot weather when the temperature dif-

ference inducing the draft is at the lowest point.

Air intakes should be located so that incoming air is properly tempered and does not cause uncomfortable drafts in cold weather.

**Artificial general ventilation** requires properly located inlets and outlets. Air coming into the room must be uncontaminated and discharge points should be located to avoid recirculation.

When the contaminant is heavier than air, openings at floor level permit its escape.

**Fans and blowers.** Both portable and stationary types are useful for increasing circulation of air which affords relief from heat. They are not substitutes for exhaust ventilation where air contaminants should be removed.

For moving large volumes of air blowing is more efficient than suction.

Devices for air circulation become less effective as temperature and humidity rise.

Caution should be used in air movement, particularly with velocities over 200 fpm. When relatively cool air is blown over workers at high velocity objectionable drafts are created.



Air handling equipment in new Johns-Manville Mill in Asbestos, Que. Fans are used in aspiration of asbestos fiber from ore milled in building and for dust control system. Capacity is 2,500,000 feet per minute. Area of cloth bags in dust filter system is about 30 acres, with four miles of piping and 4,000 dust enclosures.

## DUST AND GAS

Dust problems are usually more difficult than control of gases, vapors, mists and fumes. Dusty operations tend to project particles so that the hood must provide velocities sufficient to draw them into the exhaust system.

Exhaust hoods should be enclosed as completely as possible or the hood should be located to take advantage of the directional effects of the dust flow.

Dust removal systems generally require higher air velocities and ducts of heavier gauge metal than those designed for gases.

## CONTROL MEASURES

Where there is a definite source of air contamination, general ventilation alone is seldom sufficient. Control involves three steps:

- Identifying the substance and locating its source.
- Atmospheric sampling to determine nature and extent of contamination.
- Engineering control measures.

Control at the source may involve one or more of these measures:

- Isolation or enclosure of the hazardous operation.
- Local exhaust ventilation.
- Operational changes involving substitution of process or materials.

**Isolation** confines the operation to a definite location. Exposure of workers is either eliminated or restricted to a few selected, trained and equipped operators.



Fresh air introduced by air-moving devices permit work in confined spaces. Others not visible in this picture exhaust used air. (Mine Safety Appliances Co.)

Examples of combining exhaust ventilation with isolation and enclosure are: sandblasting rooms, shake-out and tumbling-barrel operations in foundries, dry mixing, and mixing of volatile liquids.

Processes creating excessive heat, humidity or noise should also be isolated wherever possible.

### LOCAL EXHAUST SYSTEMS

Local exhaust systems are an important means of occupational disease control. Their purpose is to create a sufficient movement of air to withdraw contaminants at point of origin and convey them to a safe point for disposal.

An exhaust system consists of four major parts:

- Hoods or enclosures near source of contaminant.
- Piping to connect hoods into system.
- Collection equipment.
- Fan.

Each part has its independent function but all must be designed to work together efficiently.

The exhaust hood is the most important part of the system. It should enclose the process as completely as possible. Air velocity decreases approximately with the square of the distance from the hood opening.

Air velocity for effective control varies with the process and material exhausted. Generally speaking, the better the enclosure and design of the hood, the lower the velocity needed.

Hoods or enclosures may be in the form of booths, canopies, lateral hoods, downdrafts through grill openings below the process, or slot-type hoods. The object in each instance is to remove the contaminant without drawing it through the breathing zone of the operators and with minimum interference with processing.

Efficiency of hoods can be increased by addition of flanges.

Ducts connect the hoods to the central fan, distribute the air flow in direct proportion to the requirements of each inlet, and maintain adequate pipe velocity to convey the contaminant to the point of discharge.

The system should be balanced so that each hood draws the proper amount of air. When this condition has been obtained, all means of

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adjustment should be permanently fixed. Areas of branch pipes and main ducts can be calculated to give correct air velocities throughout the system.

—To page 87

### LIMITS FOR VARIABLES INFLUENCING COMFORT AND SAFETY

Ross A. McFarland in Mechanical Engineering, May 1954

Variable	Desirable	Max or min value for comfort
VENTILATION .....	Sufficient additional fresh or recirculated odor-free air to remove all odors	20 cfm of fresh air
AIR TEMPERATURE .....	Ambient temperature adjusted to give effective temperature of 63-71 ET (winter) or 66-75 ET (summer)	70-72 F dry bulb
AIR VELOCITY .....	Adjusted to ambient temperature to give appropriate cooling power without drafts	40-60 fpm
HUMIDITY .....	Adjusted to air temperature and velocity to maintain comfort	25-50 per cent relative humidity
CARBON DIOXIDE .....	Not a requirement as long as ventilating requirements for removal of odors are met	0.5-1.0 per cent
CARBON MONOXIDE ....	None	0.003 per cent
NOISE .....	Reduced to permit conversation at least 3 ft with no extra effort	80-85 db over all and 50-60 db in 1200-2400 band
VIBRATION .....	Reduced to below threshold of perception	0.002 in. at 20 cps or more

# WASHROOMS and LOCKERS

**PERSONAL CLEANLINESS** is essential to health and comfort, and supplying the necessary facilities is one of industry's responsibilities. Well-equipped and well-maintained washrooms, toilets and lockers attract desirable workers and help to keep them happy on the job.

High standards of sanitation can be achieved most economically when buildings are being planned. Attention to these requirements at that stage will insure sufficient space and convenient location. Otherwise facilities may have to be fitted later into less convenient space and at higher cost.

Engineers and architects specializing in the design of industrial buildings understand the importance of personal service facilities, and plan them for economies in installation. Good planning also minimizes loss of time between job and washroom.

Facilities which were adequate when installed may not have kept pace with plant expansion. A survey of present equipment checked against the number of employees will show whether additions are needed. Also, equipment should be checked against modern standards of sanitation and appearance.

**Location.** Lockers, lavatories and toilets may be in one central location or scattered through the plant, depending on layout of departments and type of operations.

In smaller plants, washrooms and

lockers are usually near the entrance.

Toilets should not be more than 200 feet away from any work place. In multi-story buildings, one on each floor is desirable. If that is not practicable, they should not be more than one floor above or below the work place.

Washrooms in large one-story buildings usually are scattered throughout the building. Where there are many small isolated buildings, as in chemical plants and railroad yards, or where much of the activity is outdoors, a separate building may house all these facilities.

Accommodations should be located so that employees will not have to cross highways or railroad tracks to reach them.

When lockers and washrooms of a large plant are near the main entrance, small rooms with lavatories and toilets are often scattered through the plant. This saves the workers' time and makes it possible to close the main room during working hours, lessening danger of theft and requiring less supervision.

Separate washrooms and lockers are desirable for departments where there is exposure to excessive dust, dirt, heat, vapors, or moisture. These need more lavatories or shower baths than cleaner departments.

Offsetting the advantages of scattered facilities is the higher cost of installation and maintenance.

Centralized toilet and washing facilities are often preferable where women are employed. In some plants a full-time attendant may be needed.

In some large plants with underground passageways, connecting buildings and departments, personal service facilities are often located along them, conserving space for manufacturing operations. Another space-saving method is to locate them on balconies.

**Light.** Fixtures should provide sufficient light in all parts of the room. Walls, ceilings and partitions should be light in color to conserve light and encourage cleanliness.

**Ventilation.** Unless the washroom has sufficient outside windows for natural ventilation, forced ventilation will be needed.

**Floors,** and walls to a height of at least six inches, should be of impervious material, such as glazed tile or concrete with good friction characteristics.

Walls should form a tight joint at the floor level, or there should be a cove base at least six inches high. Walls should be impervious to water to a height of at least five feet. All wall and ceiling surfaces should be washable.

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Sandhogs wash up at circular washfountain after shift. (Cleanliness Bureau)

## WASH FIXTURES

**Group washing equipment.** In industrial plants, institutions, schools and other establishments where facilities must be provided for large groups, circular wash fountains are the most frequent choice.

Eight to 10 users can be accommodated at a 54-inch circular fountain and 5 to 6 at a 36-inch unit. Fewer valves and plumbing connections mean additional economies in installation and maintenance.

Economy of water is another advantage. Several persons washing at a circular fountain use little more water than one at an individual basin. Each user washes in clean running water of regulated temperature. A foot or hand-controlled mechanism regulates the flow.

Semi-circular units 36 or 54 inches wide mounted against a wall are used for narrow or irregular wash-rooms.

Precast stone and marble are the most frequently used materials. Some models are also available in enameled iron and stainless steel.

**Individual basins** of vitreous china or enameled iron make an attractive installation where comparatively small groups are to be accommodated.

Mixing faucets, rather than separate faucets for hot and cold water, are recommended. Hot and cold handles should be plainly marked, with the hot water valve always on the left side. Thermostatic control of water temperature is a desirable safeguard.

Stoppers should not be used. Faucets should permit washing in running water.

Where low first cost is a consideration, enameled troughs may be used. Over these are hot and cold water pipes with mixing faucets spaced not less than 24 inches apart. Double-width troughs, or single-width troughs back to back, save space.

Spray heads at basins or troughs should be high enough to permit washing head, arms and shoulders under the spray.

**Showers** are needed in many industries, particularly where operations are hot or dirty, or where toxic materials are used. Requirements depend upon nature of the processes. They range from 1 shower for every 5 men to 1 for every 15.

Shower installations may be of the compartment or the circular multi-stall type.

Floors and approaches should be of slip-resistant material, such as

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# SKIN INFECTIONS

**NO OCCUPATION** seems to be free from skin infections. Even substances normally harmless will irritate some skins.

While rarely a cause of death, these infections cause much discomfort and often are hard to cure. They have been blamed for some 60 per cent of all compensation claims for occupational diseases.

Causes can be classified under five headings:

**Mechanical agents**—friction, pressure, trauma.

**Physical agents**—heat, cold, radiation.

**Chemical agents**—organic and inorganic, subdivided according to their action on the skin as primary irritants and sensitizers.

**Plant poisons**—several hundred plants and woods can cause dermatitis, best known of which is poison ivy.

**Biological agents**—bacterial, fungous, parasitic.

## TYPES OF INFECTIONS

There are two general types of skin infections in industry:

**1. Primary irritation dermatitis.** Practically all persons suffer skin irritation from acids, alkalis, irritant gases and vapors, and physical agents, such as heat, cold and friction. Brief contact with a primary irritant in high concentration or

prolonged exposure to a lower concentration results in inflammation. Allergy is not a factor in these conditions.

**2. Sensitization dermatitis** is the result of skin sensitivity to a given substance. This form requires a definite period of sensitization. During this period the offending substance causes no response unless there is contact with concentrations high enough to cause primary irritation. Once sensitization develops, even small amounts of the material may cause symptoms.

Some substances can produce both types of dermatitis. Among them are organic solvents, formaldehyde and chromic acid.

## CUTTING OILS

Cutting oils and compounds are frequently involved where cutting and turning of metals is performed. The condition starts with irritation of the skin by continuous contact with the oil, forming comedones or blackheads. These comedones later become infected to form oil pimples or boils.

Dirty workers working in dirty oil form a combination that often results in serious conditions. Some types of skin are more susceptible than others, but anyone will develop the condition with sufficient exposure.

If other precautions are taken, use of protective creams will help, primarily by making it easier to cleanse the skin.

Keeping machines and the area around them free from loose oil is the basis of any program for the control of oil dermatitis.

Oil should be changed and the machine thoroughly cleaned after each 120 hours of use, or oftener. Oil may be reclaimed or replaced, depending on which is cheaper.

If reclaimed, it may be sterilized by heat during the process. Caution should be used in adding germicides to oil. Most of them are irritating to the skin if used in excessive amounts.

Oil dermatitis occurs most often on the front of the thighs and the back of the neck, where clothing rubs, also on forearms and wrists where direct contamination is heaviest. Men working in the area must keep clean and not wear oil-soaked clothing.

Men should be encouraged to

## CUTTING OILS AND COMPOUNDS

### Skin Troubles

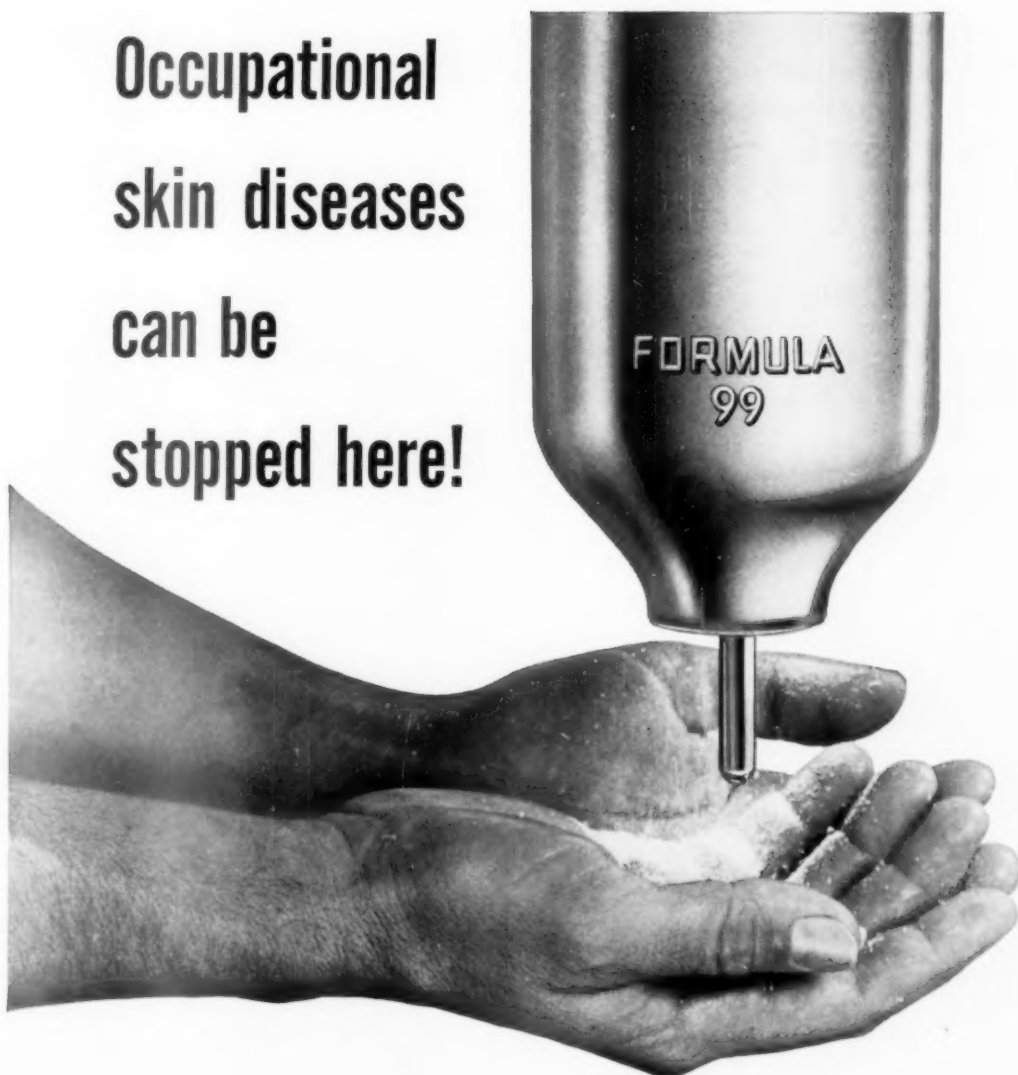
*You may be troubled with rash, pimples, or boils if you permit your skin to become plugged with dirt and oil.*

1. When quitting work at noon and at night, scrub your hands and arms thoroughly with soap, warm water, and a soft brush.
2. After each washing, rub lanolin or petroleum jelly or other ointment on your skin to prevent chapping.
3. Keep a soft brush and soft towel handy for your own use.
4. Do not wipe your hands with waste; metal particles on your skin or in the waste may scratch you.
5. Have your work clothes laundered at least once a week.
6. Never spit in the oil pans or reservoirs or otherwise contaminate the cutting fluid.
7. Get first aid promptly for all cuts and scratches.
8. Report to your foreman at the first sign of skin irritation.

NSC Safety Instruction Card No. 304



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☐ Formula #99 (Borax) 10-5 lb. bags—\$11.50

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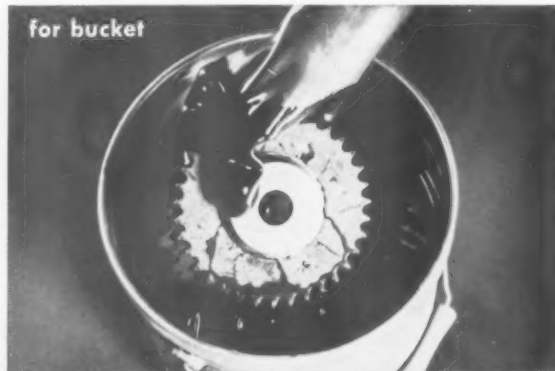
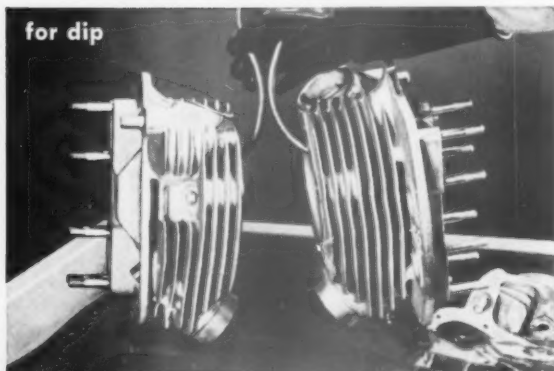


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26 April 1955

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bathe at the end of the shift. A shower with warm water, mild soap or detergent, and a soft brush is helpful in the control of skin infections.

**Predisposing factors.** In investigating causes of occupational skin disorders, the following should be considered:

1. Race of patient.
2. Type of skin.
3. Age.
4. Sex.
5. Degree of perspiration.
6. Personal habits of cleanliness.
7. Pre-existence of skin disorders and allergic states.
8. Diet.

#### GENERAL PRECAUTIONS

Prevent or reduce contact with known irritants wherever possible. Use of enclosure or mechanical methods of handling will reduce skin contacts.

Watch housekeeping around processes.

Provide personal protective equipment—gloves, aprons, face shields, protective creams, etc.

Encourage personal cleanliness which shortens contact of irritants with the skin. Select a cleanser which can be used by most persons.

## HEAT AND HUMIDITY

**EXCESSIVE HEAT**, whether due to climate or to manufacturing processes, provides some of industry's most complicated and expensive problems. Loss of productive efficiency at high temperatures is serious and human health and comfort are affected to a greater or lesser degree.

Accident rates are also influenced by lack of alertness caused by excessive heat and humidity.

Serious year 'round exposures include boiler and engine rooms, foundries, steel mills and glass plants. Seasonal heat hazards are found in construction work, public utility, highway and railroad maintenance, and farming.

When temperatures approach 90 degrees, especially when accompanied by high humidity and lack of air movement, the human body rapidly loses its ability to compensate for atmospheric conditions.

Individuals vary considerably in their susceptibility to heat but it is good economics to cool the air of

working spaces as much as possible in summer and to protect workers exposed to heat-producing processes.

Avoiding the ill effects of heat and humidity requires close attention to working conditions by the employer and observance of reasonable precautions by the worker. Even where air conditioning is not practicable much can be done to improve conditions.

**Ventilation** is one of the most important items. Keeping the air in circulation by general mechanical ventilation is helpful, and spot cooling by fans often affords increased comfort. However, when the wet bulb temperature of the surrounding air is higher than that of the body, blowing air over the worker makes him feel even more uncomfortable.

In industries where heat is excessive, such as hot mines, glass plants, and steel mills, it is frequently useless to blow air over workers unless it is cooled and dehumidified.

In some industries there are op-

### THE SOLUTION TO AN OLD INDUSTRIAL PROBLEM

#### Contact Dermatitis

**VEREX**—a general purpose barrier cream widely used in both the office and the plant, in the mechanical, textile, chemical, rubber and process industries—protecting the skin against coolants, dirt, grease, inks, cement, sulphur, dust, carbon black, etc. Protects against contact with poison ivy. Soothing to the skin. Washes off with soap and water.

**CLEREX**—a gel which protects the skin against organic solvents. Forms a continuous, strong elastic skin-adherent film which does not interfere with tactile sensation. The film is insoluble in all anhydrous organic solvents, such as the hydrocarbons (benzene, benzol, toluene, gasoline, varsol, turpentine, kerosene, solvent naphtha), the chlorinated hydrocarbons, nitriles, and the polymerizable monomers (styrene, acrylonitrile, and unsaturated esters for producing polyester resins). Used in making and using paints, varnishes, plastics, polyester resin-fiber-glass compositions, lacquers, inks, and in metal degreasing using trichloroethylene. Washes off with soap and water.

**H-R CREAM**—a modification of CLEREX, having a vanishing cream base. It is highly resistant to all the solvents which CLEREX resists. It is available to employees who prefer a cream base rather than the CLEREX gel. It has proven highly effective against phenolic vapors, creosote, as well as the solvents and other materials against which CLEREX is effective.

**HYDREPEL-S**—a protective cream which forms a film on the skin protecting it against water and water-borne irritants. It is a plasticized ethyl cellulose-castor oil composition in a vanishing cream base combined with a silicone (dimethyl polysiloxane) and the film which it forms sheds water and water solutions and resists the reagents carried by the water solutions such as weak acids, aldehydes, alkalis, soaps, detergents, salts, etc. The film formed by HYDREPEL-S will stay on the skin for long periods of time, if desired. It does not come off with soap and water but is easily removable by an alcohol solution (HYDREPEL REMOVER).

## HYGIENE RESEARCH INC.

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Literature and Samples on request. Write Dept. NSG-1



erations in which the atmosphere cannot be kept below maximum recommended temperatures. Radiation from hot objects presents difficulties in control. Heat received through radiation can be decreased by shields or insulation where fans would be ineffective.

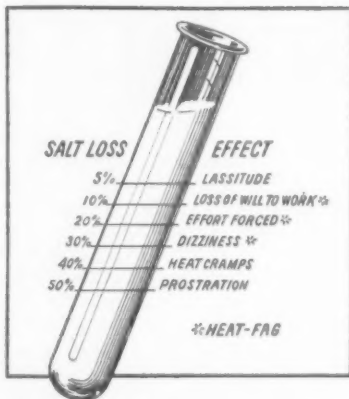
Adequate washroom facilities and plenty of cool, pure drinking water also offset the effects of hot surroundings.

**Work clothing.** For a hot and humid environment, clothing should be porous, light in weight and allow air to circulate around the body.

For exposure to local sources of intense heat and infra red and ultra violet radiation, special protective garments are needed. Leather is widely used, and for more severe exposures, asbestos and wool are needed.

#### ACUTE AILMENTS

Exposure to extreme heat, especially when accompanied by physical exertion, may result in heat cramps, heat exhaustion, or heatstroke. Knowledge of correct first aid treatment for each type of ailment is important. All cases should receive medical attention.



How depletion of the body's salt through perspiration affects the individual.

**Heat cramps** are due to excessive loss of salt and moisture from the body. They come suddenly and may involve skeletal or intestinal muscles. Even if the moisture of the body is replaced by drinking plenty of water, loss of salt may cause heat cramps.

Heat cramps are relieved in a few hours by proper treatment but soreness may persist for several days.

**Heat exhaustion** is a shock-like

state also resulting from loss of salt and moisture. Symptoms are pallor, relatively low temperature, weak pulse, a feeling of restlessness or anxiety, and sometimes unconsciousness. It is much more serious than heat cramps and is occasionally fatal.

A person with either heat cramps or heat exhaustion should be given salted water, if conscious, and put under medical care as quickly as possible.

**Heatstroke** (sunstroke) is caused by exposure to an environment in which the body is unable to cool itself sufficiently. It is not necessarily the result of exposure to the sun. As a result, body temperature rises, and the heat-regulating mechanism breaks down.

Symptoms are severe headache, flushed face and high temperature, visual disturbances and loss of consciousness. Death may occur within a few hours, but if timely treatment is available the patient has a good chance of recovery. One of the after-effects is inability to withstand heat.

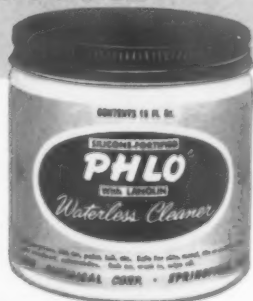
In general, the same precautions will help to prevent or minimize all

## INDUSTRY'S CHOICE — Coast to Coast



#### PRACTI-KREME

... This combination skin protector and cleaner has been used and proved to check dermatitis before it starts — for over 15 years. Applied before work, it provides a flexible, fat-based coating over the skin. When moistened after work, Practi-Kreme cleans completely and quickly.



#### NEW PHLO WATERLESS CLEANER

... Safe, quick and easy to use, Waterless Phlo removes all industrial soils. Containing both silicone and lanolin for double protection, it is milky white, smooth in consistency. New handy dispenser makes using and refilling a simple matter. Management and workers agree — coast to coast — there's no better cleaner than Phlo Waterless.



#### PHLO

... is a neutral skin protector rich in lanolin and now fortified with silicones. Magic silicones make Phlo water-repellent, adhesive, non-toxic. Phlo is a most effective barrier against bacteria, irritants and soil. Try it ... then you'll know Phlo should be in your plant now.

Write for free test samples today.

THE CHEMICAL CORPORATION 54 Waltham Avenue, Springfield 9, Massachusetts





Dispensed from "throw-away" container—no costly maintenance. One "C-60" dispenser replaces from 3 to 6 conventional soap dispensers.

**DRAMATIC "UPSIDE-DOWN HAND TEST"  
PROVES SBS-60 IS ALMOST**

**IMPOSSIBLE  
TO WASTE!**



**SBS-60**

**CREAM DEODORANT SOAP**

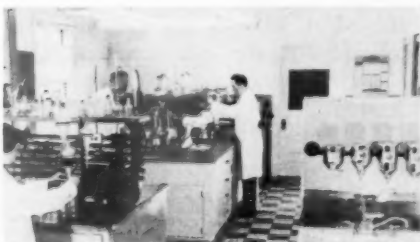
**Saves up to 50% on soap costs**

The above photograph **PROVES** that no other soap can match the **REAL ECONOMY** of SBS-60 Cream Deodorant Soap.

SBS-60 is a white, opaque, thick-bodied cream that is economically dispensed . . . and for all practical purposes, is impossible to waste! It is an entirely *new type*

of skin cleanser heralded as the first major soap development in a quarter of a century.

No matter how efficient your present skin cleansers . . . SBS-60 Cream Deodorant Soap can bring you savings up to 50%. There are the *facts*. Get complete, detailed "question and answer" literature and learn the whole exciting story. Mail the coupon *now*.



SBS research developed SBS-60 after years of study. This new type of soap is proclaimed the successor to liquid and bar soaps.



Sugar Beet Products Co.  
Chemical By-Products Division  
302 Waller St., Saginaw, Mich.

Canadian Subsidiary  
Chemical By-Products, Ltd.  
8 Ripley Ave., Toronto 3, Canada

**SUGAR BEET PRODUCTS CO.**  
302 Waller St., Saginaw 60, Mich.

GENTLEMEN:

Send detailed "question and answer" literature on  
SBS-60 Cream Deodorant Soap.

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_



# B R E C K

## FOUR WAYS TO PROTECT SKIN FROM INDUSTRIAL DERMATITIS

BRECK pH7 PROTECTIVE CREAM protects the hands against irritants such as lubricating oils, cutting compounds, tar, greases, rubber dust, aromatic and hydrocarbon solvents, fiberglass, paint and iron dust. It forms a non-sticky, invisible film over the skin. Breck pH7 Protective Cream is easily applied. It is easily removed with Breck Hand Cleaner or soap and water.

BRECK WATER RESISTANT CREAM protects the skin against the action of water and water solutions such as liquid coolants, emulsified cutting oils, mist and spray from alkali baths and plating solutions, cement and lime. It covers the skin with a light, protective film which is not slippery or sticky. Breck Water Resistant Cream has a pH value of 8.

BRECK HAND CLEANER helps eliminate the use of harsh, gritty, highly alkaline or defatting hand cleaners. It does a thorough cleansing job, yet is mild and non-irritating to the skin.

BRECK WORK CREAM is used after exposure to degreasing materials and at the end of a day's work. It substitutes fatty materials for the natural skin oils which have been removed. In this way Breck Work Cream helps keep the hands smooth, pliable and lubricated.

*A Breck Industrial Preparations Booklet will be forwarded to you upon request.*

JOHN H. BRECK, INC. • MANUFACTURING CHEMISTS • SPRINGFIELD 3, MASSACHUSETTS  
NEW YORK • CHICAGO • SAN FRANCISCO • OTTAWA • CANADA

types of disability due to heat.

**Sunburn** can be painful and dangerous. In strong sunlight, the head should be covered and exposure of the skin kept at a minimum. Tan should be acquired gradually. Treatment is the same as for any other type of burn.

#### USE OF SALT

Maintaining the salt in the body at an adequate level enables men to work at strenuous occupations where temperatures are unavoidably high.

For sedentary workers, normal use of salt with food may be sufficient, but those whose jobs require greater physical exertion may not take enough by this method.

**Dispensing.** The most convenient and popular method for providing salt is in tablet form. The 10-grain size is more frequently used, and it may be obtained either as pure salt or in a combination of 70 per cent salt and 30 per cent dextrose.

Tablets containing dextrose are more palatable and more easily assimilated by many persons.

Diabetics should be warned against tablets containing dextrose and plain tablets should be provided for their use.

For those who find difficulty in taking even a moderate amount of salt, enteric-coated tablets are available. These pass through the stomach intact and dissolve in the intestines.

In most plants, a dispenser for salt tablets will be found beside the drinking fountain. Dispensers are made in several styles and sizes.

Water is as important as salt. A full glass of water (eight ounces) should be taken with each tablet.

Salt is sometimes added to the water where drinking water is not used in the industrial processes. Concentrations vary from .1 to .5 per cent, depending upon the temperatures and nature of the work.

Use of salted drinking water should be under medical supervision.

**Caution.** Persons with kidney or heart disease or high blood pressure should seek medical advice on the use of salt. Such men should not be placed on jobs where they would be exposed to high temperatures or heavy manual work.

#### Controlling Air-Borne Bacteria

Control of air-borne bacteria in industrial and public buildings has been the subject of much research. Control of such bacteria is some-

times required by manufacturing processes as well as for health reasons.

Ultra-violet radiation and chemical bactericides will destroy bacteria, but practical methods of application impose numerous difficulties.

Ultra-violet radiation using low-pressure mercury lamps with ultra violet transmitting glass or quartz envelopes will destroy many micro-organisms.

Application is by irradiating the upper air stratum of a room, beam-ing or screening to provide a narrow

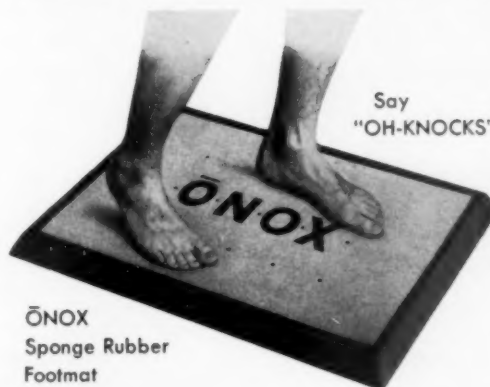
barrier of protective light, or inserting a radiation source in an air duct.

Radiations of sufficient intensity to kill bacteria are dangerous to eyes and skin. Lamps should not be in the range of vision.

Chemical bactericides are also used, propylene glycol being the most effective under most conditions. Effective concentrations are odorless and non-toxic to human beings.

Use of chemical bactericides requires close control of humidity in the area to be protected.

## 74% USE ŌNOX<sup>®</sup> TO STOP ATHLETE'S FOOT



## 74 of the 100 Largest Manufacturers use ŌNOX SKIN-TOUGHENER

Modern research has upset old theories about Athlete's Foot control. Skin specialists have proved that the best way to prevent Athlete's Foot is to improve the condition of the skin. *That's what ŌNOX does.* ŌNOX mineral salts toughen the skin and make it resistant to fungus growth.

**No splash • No mess • No waste • Odorless  
Easy to maintain • Nothing to get out of order  
Men like ŌNOX • Relieves tired, aching feet**

#### 60 DAY TRIAL OFFER

We will ship your trial order for any amount of ŌNOX and footmats. *You pay nothing* unless fully satisfied after 60 days' use.

### ŌNOX, INC.

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SAN FRANCISCO 7, CALIF.

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BROOKLYN • CLEVELAND • NEW ORLEANS  
HAWTHORNE, CALIF.

**NOW, USE THIS  
SANI-MISTER  
FREE...**



**FIGHT  
ATHLETE'S  
FOOT  
WITH SANI-MIST  
the new  
sanitary way**

**Makes Foot Baths and  
other methods obsolete!**

AND PEOPLE LIKE TO USE SANI-MIST, because it "refreshes" their feet. It's so clean and sanitary . . . as personal as your own toothbrush. Kills athlete's foot fungi in 30 seconds with no chance of dilution or contamination.

You buy only the Sani-Mist Solution, the spray dispenser is leased at no charge for as long as you use Sani-Mist. Write today for the name of your Sani-Mist dealer.

**SANI-MIST INC.**

Dept. NSN • 1724 Chestnut St.  
Philadelphia 3, Penna.

## DRINKING WATER

THE HUMAN BODY contains a large percentage of water which is constantly being depleted through elimination, breathing and perspiration. It must be replenished frequently to protect comfort, health and efficiency.

Employees will not drink enough water unless facilities are conveniently located and the water is cool and palatable. Clean and attractive fixtures are also important, particularly for women employees and customers.

In providing facilities, the following should be considered:

- Number of persons to be served
- Type of work—light or strenuous
- Temperature of workroom
- Purity of water
- Temperature of water
- Design of fixtures
- Location of outlets

One outlet for every 50 persons is a recommended minimum for industrial establishments. If temperature is high or work involves considerable physical exertion, more will be needed.

It should not be necessary to walk more than 50 feet for a drink. If outlets are too far apart, employees will not drink enough water or they will spend too much time away from work.

All rooms assigned for eating purposes should have a supply of drinking water. No drinking facilities should be installed in toilet rooms.

**Water supply.** Municipal health departments maintain a close watch over the water supply. But when the plant is located outside the city limits, and for temporary operations such as construction, public utility and oil-field work, the employer must supervise the water supply. It should be analyzed regularly.

If unapproved or "service" water is used for industrial processes or for fire protection, signs should be posted warning against its use for drinking. Care must be taken to avoid possibility of cross connections between the two systems.

**Sterilization.** Water of questionable purity can be made safe for drinking by chlorination or boiling. Compounds for sterilizing water, some in convenient tablet form, are available.

Filtration is desirable for removal

## EYE WASHING FOUNTAIN



**SAVE EYES!**

Leading industrial doctors advise immediate washing with plenty of running water as the best first aid treatment for any chemical in the eyes. Records prove that washing with water for ten minutes or more, close to the accident, is necessary to reduce or eliminate eye damage.

Forehead operation leaves hands free to open eyelids so water can be directed wherever chemicals might be lodged. Sanitary white baked enamel bowl is resistant to most fumes.

Over 500 industrial plant installations have been made to date.

Write For Details.

VALVE  
Chain Operated  
Quick Action  
Self-Closing

## NEW EMERGENCY SHOWER



Deluge  
of Water  
from 40  
G.P.M.

The B & A Shower is the quickest and most satisfactory way to saturate a worker with gallons of water the instant an accident occurs, to prevent a disfiguring burn—even a fatality.

Special shower head, no holes to clog—can be used where unfiltered water prevails.

Write For Details.

GLASS GLIVERS  
AND CHEMICAL  
IN EYES!

DISFIGURING  
FACIAL CUTS,  
AND BURNS!

CUTS AND  
CHEMICAL BURNS  
ON ARMS /  
AND BODY

THIS HAPPENS  
WHEN  
UNPROTECTED  
GLASS BOTTLES  
ARE DUMPED



NEW  
LOW COST  
B & A  
SAF-T-BAGS



5 PINT  
1 GALLON  
5 GALLON

are widely used for the safe handling of glass bottles containing harmful chemicals; also the storage and recovery of expensive serums, biologicals, and other costly products.

Painful cuts, disfiguring burns, loss of eyesight, or even a fatality, do result from corrosive liquid splash and flying glass when unprotected bottles shatter.

Write For Details.

**BENSON & ASSOCIATES, INC.**

P. O. Box 7542, Dept. N.S., Chicago 80, Ill.



# VI-LAN CLEAN

SELF-SERVICE UNIT

No. 815

**The dispensing service unit that is well nigh  
INDISPENSIBLE**

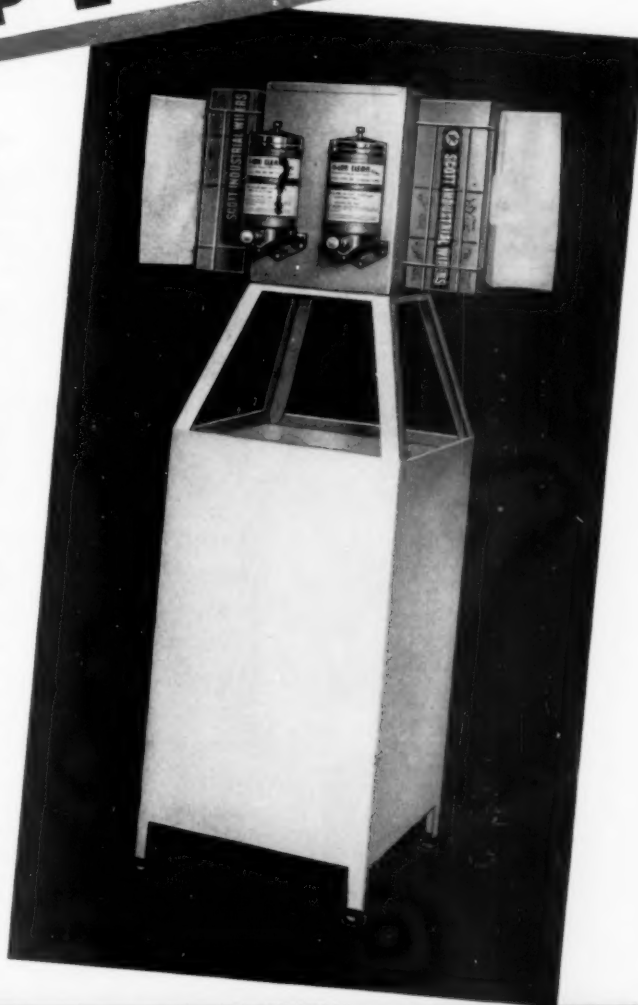
VI-LAN CLEAN  
fortified with Actamer  
the wonderful bacteriostat created  
by the Monsanto Chemical Co.

**EQUIPPED FOR SCOTT  
INDUSTRIAL WIPERS**

*Now You Can Actually  
Control Dermatitis*

The illustration shows the stature of this new VI-LAN CLEAN SELF-SERVICE UNIT, No. 815, equipped with two VI-LAN CLEAN dispensers, two No. 939 Industrial Wiper Brackets for SCOTT INDUSTRIAL WIPERS, and a waste disposal bin of large capacity. This dependable and ever-ready on-the-job wash-room service unit, which may be used with or without water, comes to the fore as a needed item in every factory and industrial plant. Managers of production and safety departments praise it, want it and install it, because it saves time, money and lost man hours, insuring industrial health, cleanliness and overall economy. VI-LAN CLEAN is a perfect all-purpose skin cleaner, activated with a potent bacteriostat which overcomes dermatitis and other skin ailments. It contains ACTAMER, a product of Monsanto Chemical Company, and is approved by the American Medical Association. VI-LAN CLEAN does what soap can not do.

Write for descriptive folder TODAY



## DAMERON ENTERPRISES

INCORPORATED

427 So. 20th Street



Louisville 3, Kentucky

of sediment but it will not destroy harmful bacteria.

**Temperature of water.** For workers who perform heavy manual labor, from 50 to 55 F. is recommended. For office workers, restaurant patrons and others who are less active, the temperature may be as low as 45 degrees.

#### DISPENSING

Approved methods of dispensing drinking water are:

- Fountains of approved design.
- Paper cups provided at outlet.

**Drinking fountains** with individual cooling units are more suitable for many types of industry than a central cooling system. Fountains should conform to specifications of the ASA Code Z 4.2. Important features are:

- An angle jet, which prevents the water falling back on the nozzle.
- A guard to keep the user's lips away from it.

Older installations in factories, offices, stores and public buildings which do not conform to hygienic standards can often be modernized at reasonable cost.

Desirable accessories in drinking fountains are line strainers and



pressure regulators. An outlet for filling glasses is also useful, particularly for office use.

**Hazardous locations.** For use where flammable gases, vapors and dusts may be found, explosion-proof fountains are available.

**Paper cups** should be kept in dust-proof containers and receptacles provided for used cups. The container must be kept filled or workers will salvage old cups.

**Maintenance.** A cuspidor or sand urn should be provided at each fountain to receive discarded chewing gum, tobacco, etc. Regular cleaning of porcelain and metal keeps the fixtures attractive and sanitary.

**Salt tablets.** A dispenser should be located near the drinking fountain.

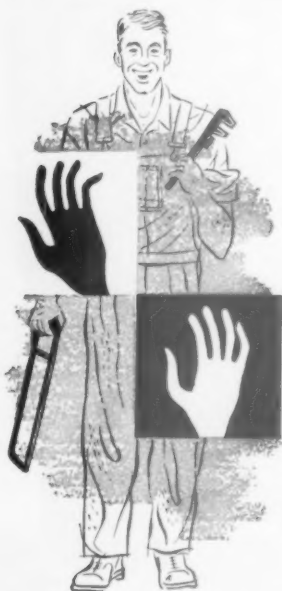
#### ISOLATED JOBS

**Portable containers.** For jobs remote from city water mains, such as construction work, public utilities and railroad maintenance, mining, and other isolated working places, there are safe and convenient methods of providing drinking water. It is not necessary to depend on an open bucket with one cup or dipper for the whole crew.

**Insulated coolers,** with dispensers for paper cups are frequently used. The container should have a tight-fitting cover.

**Portable drinking fountains** provide another method. Pressure is maintained with a hand pump and slight pressure on a valve releases a jet of water at an angle, as in approved permanent installations and

#### IMPROVE EFFICIENCY



# STEPAN

## PROTECT YOUR WORKERS

**IMPROVE PRODUCTION:** Stepan ph-6 is a specially formulated, sulfonated oil, bland skin cleanser . . . amazingly effective in removing oils, greases, and other industrial grime. Lotion-like effect actually protects the skin . . . leaving it clean, smooth, and supple. Stepan also offers a complete line of dispensing methods designed to meet every industrial requirement.

### Neutra-Foam

New mild synthetic skin detergent with excellent foaming properties. Leaves no disagreeable soapy odor on the skin.

Both PH-6 and Neutra Foam are surprisingly economical. Write for literature and samples.

#### CHEMICAL COMPANY

20 N. Wacker Drive, Chicago 6, Illinois  
Telephone CE 6-5511





## "I see earth has discovered New Concept Cleaning!"

Progressive  
Plant, Inc.

Clean with low toxicity TECSOLV Safety Solvent throughout your plant.

Then re-use the solvent.

The completely automatic Teeter-Still saves over and over by distilling and recovering contaminated Safety Solvents in your own plant.

**Savings and Safety Too!**

Distill these solvents safely and automatically:

VYTHENE  
 VYTHENE-D  
 TECSOLV #204  
 TECSOLV #919  
 TECSOLV #931  
 PERKLOR-A  
 TRIKLOR-A

Use and re-use  
 Safety Solvents - - -  
 The Savings is  
 YOURS!



**SAFE  
 AUTOMATIC  
 DISTILLING  
 OF TECSOLV  
 SOLVENTS  
 IN YOUR  
 PLANT AT  
 APPROXI-  
 MATELY**

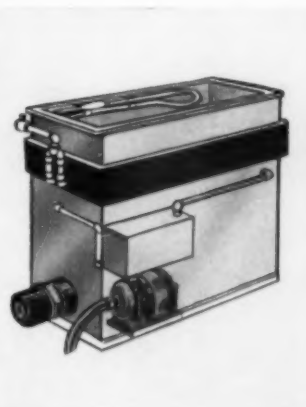
**2¢  
 A GALLON**



**AUTOMATIC TEETER-STILL \***

Model 82

Compact, modern, completely automatic  
 Teeter-Still distills five to seven gallons of  
 TECSOLV Solvents per hour at a cost of ap-  
 proximately 2¢ a gallon.  
 Solid stainless steel and copper construction.



**SOLVENT VAPOR DEGREASER**

Model 24

Solvent vapor degreaser will automatically  
 distill TECSOLV Solvents without interruption  
 to the degreasing operation. Solid stainless  
 steel construction for long life.  
 Available in three sizes.

TECT, INC.

Dumont, N. J.

I am interested in:

- ☐ Teeter Still  
☐ Solvent Vapor Degreaser  
☐ Safety Solvents

Application .....

Send complete data and name of nearest jobber.

Name .....

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Company .....

Address .....

City ..... State .....

**NOW  
 WRITE FOR  
 DETAILS**

**TECT, INC.**

\* U.S. Patent pending.

Dumont, New Jersey

a guard keeps the lips away from the nozzle. Insulation keeps the water cool for several hours.

**Vacuum bottles** for individual use may be provided for remote or hard-to-reach places, such as crane cabs.

**Purification.** If it is necessary to depend on a local water supply of

uncertain purity, the water may be made drinkable by tablets available for this purpose.

**Salt tablets.** In many isolated jobs men perform strenuous work under the hot sun and perspire freely. Salt tablets may be issued to them in individual packages.

## FOOD SERVICE

**IN-PLANT FEEDING** no longer is a bare necessity; it's an important policy consideration. From coin machines that vend hot soup to gleaming cafeterias serving five-course meals, industry has made in-plant food service a big business.

Its extent and importance are indicated by these recent estimates:

—About 55 per cent of American manufacturing plants now serve food.

—More than 8 out of 10 use vending machines to help solve the feeding problem. More than one-fifth of these depend entirely on automatic vending.

—Close to 20 per cent plan to expand

or install new in-plant feeding facilities within the next two years.

Plants with fewer than 250 workers represent 96 per cent of U.S. manufacturing establishments. With the development of vending machines and disposable paper utensils, even these find it practical, as well as advantageous, to provide substantial meals.

**Vending machines.** The big growth in popularity of vending machines is due to the increase in variety of foods and beverages that can be handled. They now dispense any-

thing that can be packaged, including french fried potatoes, thick soups, stews, chili, goulashes—food that sticks to the ribs of industrial workers—as well as pastries and baked goods, sandwiches and fresh fruit.

A good part of this increase is the result of better design—improved methods of keeping foods hot, development of a compact refrigeration unit to chill foods, more uses for disposable cups and containers, the application of radar for cooking on the spot. Experiments are still going on and some enthusiasts predict complete machine-vended seven-course meals in the near future.

Most companies do not attempt to make a profit from vending operations. The usual arrangement is to receive a percentage of gross receipts from the vendor. Profits to plants frequently amount to more than \$1,000 a year. One survey shows that more than half the companies donate vending machine profits to recreation and entertainment for employees or to benefit funds for workers.

While vending machines still are growing in popularity, they are a supplementary service in most cases. The majority of plants using them also have cafeterias, canteen or mobile food units.

**Paper utensils** meet all hygienic requirements, yet eliminate dishwashing, breakage, and maintaining a staff of employees. Not only in cafeterias and canteens, but in vending operations, improved paper products have opened new vistas in industrial food service. Special papers for frozen foods (such as ice cream) or for hot foods (such as soup) are now making in-plant feeding inexpensive and practical, as well as safe and sanitary, for plants of every size. Paper utensils avoid the health hazard of poor dishwashing

### IN HAZARDOUS AREAS USE

# PURO

*Electric*

## WATER COOLERS



- Provide all the convenience of a bubbler-top or combination bubbler-top and storage compartment water cooler plus complete safety in hazardous locations (Class I, Group D) where life and property must be protected.
- Explosion-proof because all electrical components are completely enclosed, though readily accessible for servicing.
- Listed under Reexamination Service of Underwriters' Laboratories, Inc.

**WRITE NOW FOR FOLDER SHOWING ALL UL APPROVED AND REGULAR PURO MODELS**

**MODEL TC-SX ILLUSTRATED**

Bubbler-top with pre-cooler. Refrigerated stainless steel compartment (approx. 2 cu. ft.) with lock. 2 ice cube trays. Drain for condensation.

**PURO FILTER CORPORATION of AMERICA**

Puro Building, Long Island City 1, N. Y.

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# NEW! ...Different

THROUGH FAR REACHING RESEARCH PAX CHEMISTS BRING TO INDUSTRY ENTIRELY NEW CONCEPTS IN WATERLESS SKIN CLEANING WITH WONDERFUL, NEVER-BEFORE-POSSIBLE RESULTS



## PAX WATERLESS SKIN CLEANER LIGHT DUTY

Enhanced with LANOLIN and HEXACHLOROPHENE

PAX WATERLESS SKIN CLEANER Light Duty is so scientifically formulated and processed that it will not redden, dry or alkali-burn the normal skin. PAX contains none of the ingredients that leave a solvent odor or cause chemical drying of the skin. It leaves the skin clean, soft and pleasant feeling with never a hint of greasiness, and this wonderful PAX CLEANER conforms to the gentle ACID MANTLE RANGE of the skin.

Use PAX WATERLESS SKIN CLEANER Light Duty as much as 100 times a day or more with no skin irritation. It is SAFE for BABY'S TENDER SKIN and so GENTLE that women use it to remove facial make-up...its soothing, delightful creaminess and fragrance makes women trust it instinctively...YET its magic cleaning action makes it perfect for removing such soils as ground-in grease and grime from MECHANIC'S DIRTY HANDS.

When you use PAX LIGHT DUTY *without* water, rub it in thoroughly, then wipe the hands clean with a paper or shop towel. For equally surprising results use PAX LIGHT DUTY *with* water in the same manner as soap is used.



## PAX WATERLESS SKIN CLEANER EXTRA HEAVY DUTY

Enhanced with LANOLIN and HEXACHLOROPHENE

Easily REMOVES PAINTS, LACQUERS, RUBBER CEMENTS, TARS, MASTICS, GREASES and OTHER HARD-TO-REMOVE SUBSTANCES...even after they have become dry and set on the skin. And the cleaning is done in SECONDS.

No other skin cleaner can match the superb performance of this fabulous NEW PAX cleaner. The first time you try it you'll immediately recognize its superiority...far advanced in cleansing power...far advanced in the scope of soils it will remove when compared to other known brands of waterless skin cleaners. The range and cleaning power of this PAX product is likely to be underestimated until you try this NEW...vastly different cleaner yourself. A trial will convince you, just as impartial "product evaluation" tests have proven, that NEW PAX EXTRA HEAVY DUTY WATERLESS SKIN CLEANER is up to 75% more effective than other leading brands in its capacity to loosen tough and resistant soils. PAX does the job BETTER and FASTER. The "live solvent action" of PAX quickly dissolves and floats away the most stubborn materials that are frequently beyond the scope of other waterless skin cleaners.

Both PAX WATERLESS SKIN CLEANER Light Duty and Extra Heavy Duty are so radically different that patents have been applied for by the G. H. Packwood Manufacturing Company.

*Send Today for a FREE SAMPLE*



Look for the PAX Rooster and the PAX SEAL... They are trade marks used only on products of the Highest Merit.



G. H. PACKWOOD MANUFACTURING COMPANY  
Manufacturing Chemists and Engineers  
1553 Tower Grove Ave. • St. Louis 10, Mo.

Please have a PAX representative call on us with samples, complete information and prices on these two NEW PAX WATERLESS SKIN CLEANERS. No obligation, of course.

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Title \_\_\_\_\_  
Firm \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ Zone ( ) , State \_\_\_\_\_

# FUMES COST MONEY!



Don Witte, Seattle

Photo courtesy Stokely-Van Camp, Inc., Frozen Food Division

Noxious, foul-smelling exhaust fumes and odors need never be a problem in your plant again. For wherever you operate LP or gasoline-powered equipment indoors—even part time—Oxy-Catalyst Exhaust Systems provide an effective way—the *only* way—to good fume elimination.

Operating by catalytic reaction, the Oxy-Catalyst OCM eliminates 95% or more of the dangerous carbon monoxide—90% of the irritating hydrocarbons—from the exhaust gases of lift trucks, bulk handling trucks, stationary engines—any type of equipment run by gasoline or by LP gas.

You know how both gasoline and LP exhaust fumes can cause headaches, eye irritation, nausea and worse. These mean production slow-downs that cost you money. With the OCM, you can run your equipment *continuously, efficiently, safely*, without objectionable exhaust fumes, in even closely confined areas. And you get the full benefits of greater employee productivity and morale.

If you're interested in cutting costs by speeding production—if cleaner, safer air is important in your plant—write now for complete information on the OCM and name of your nearest supplier.

**For Diesel Exhaust Fumes** New OCM Dieseler reduces below objectionable levels harmful, irritating exhaust from any 4-cycle diesel engine when running at or over 60% load. Write for details.



## OXY-CATALYST, INC.

WAYNE, PA., U.S.A.

MANUFACTURING • ENGINEERING • RESEARCH

Fume and Odor Elimination, Air Pollution Control, and Waste Heat Recovery

OXY-CATALYST, INC., Wayne 2, Pa.

Please send complete information on:

☐ OCM Exhaust for gasoline engines

☐ OCM Dieseler for 4-cycle diesel engines

☐ Send name of nearest supplier

Name \_\_\_\_\_

Firm \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

Inquirers in the U.S.A. or its territories, or in Canada, should write to Wayne, Pa. Inquirers elsewhere should write to Pan American Chemical Inc., 9 Rue La Perouse, Paris 16, France.



and the expense and danger of broken glass.

### TYPES OF SERVICE

There are four main types of food services for industry:

1. Cafeterias preparing and serving hot meals.
2. Canteens or lunchrooms dispensing sandwiches and other packaged foods and hot and cold beverages. A few hot foods may be served.
3. Mobile canteens which circulate through the plant. The trend may be away from this type which, it is claimed, wastes time and disrupts production.
4. Box lunch service.

**Management.** The big trend is for industry to get out of the restaurant business and to turn cafeteria operations over to a caterer. Many companies, however, shy away from the once-prevalent practice of giving cafeteria management to outsiders. They found that the company still was blamed for poor service, bad food, and high prices. Hence, they provide professionally-managed

### SPACE FOR LUNCHROOMS

Max. No. of persons at one time	Square feet per person
Less than 25	8
25 to 74	7
75 to 149	6
150 to 500	5
More than 500	4

plant restaurants supervised by the factory personnel manager.

The contractor gets a guaranteed fee, based on a stipulated per-employee cost of operation. Any operating loss is underwritten by management, which can decide whether the contractor should make income and costs meet by serving beans as the main dish on a 45 cent meal or whether roast beef should be served, with the employer making up the deficit. Many larger plants follow the latter procedure, regarding deficits as an investment in employee good will.

Smaller companies more often hire an industrial caterer. Foods are prepared in a central kitchen and transported to the plant in vacuum containers. This avoids the investment in kitchen space and equipment and maintaining the necessary staff, though the company does provide eating space and dishwashing facilities.

Some large plants which cover vast areas also prepare food in central kitchens and ship it to scattered lunchrooms in vacuum insulated containers.

## SANITATION

Whether operated by the company or by a concessionaire, constant supervision is desirable to maintain standards of quality and sanitation.

Strict cleanliness in the kitchen is most important. This applies to both facilities and personnel. Pre-employment and periodic physical examinations for employees are important precautionary measures. All perishable food and beverages should be kept under refrigeration except when being prepared or served.

**Dishwashing.** Machines are preferable from the hygienic standpoint than dishwashing by hand, since, with machines, much hotter water can be used. They are also more economical where large volumes of utensils must be washed and are efficient and easy to keep clean.

Most codes require a bactericidal rinse after washing. This can be done by immersion in water of at least 170 F. for two minutes or longer. A chlorine solution of 100 parts per million is also effective.

For hand washing, requisites are a two- or three-compartment sink, provision for scraping dishes and disposing of garbage, adequate water-heating facilities, and effective detergents. Baskets for utensils make it possible to use hotter water than hands can endure.

Drying with towels, while not expressly prohibited, is not recommended.

Local and state health departments and publications of the U.S. Public Health Service can suggest helpful information for planning and operating food service facilities.

## Ventilation

—From page 70

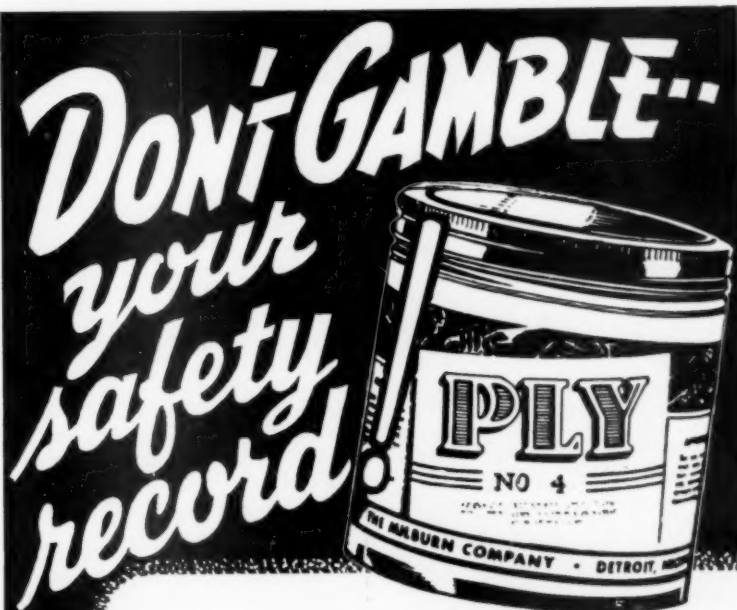
Material used for ducts must resist abrasive action of dust or corrosive effects of gases and vapors.

Sharp turns in ducts should be avoided. They take extra power and cause a large pressure drop.

Traps with clean-out gates should be provided at the bottom of vertical runs, and clean-out gates at regular intervals on the bottom side of horizontal runs.

Fans should have a capacity slightly higher than calculated requirements to allow for leakage in the system, accumulation of material on fan blades, and similar difficulties.

Where the contaminant is hot and has a natural tendency to rise and



1

35 MILLION JARS of PLY Skin Protective Creams have been used.

2

Use Ply Skin Protective Creams with a 24 year Proven Record of Satisfactory Performance.



3

Various (12) Types of Ply Skin Protective Creams Protect Against 2500 Types of CHEMICAL HAZARDS!!

**YOU PAY NO PREMIUM PRICE for PLY QUALITY AVAILABLE IN TUBES, JARS AND BULK**  
**Send for FREE Liberal Sample Today!**

FIRM NAME \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Attention of: \_\_\_\_\_

Title \_\_\_\_\_

Exposure Hazard \_\_\_\_\_

**MILBURN COMPANY** **DETROIT 7, MICHIGAN**

— MANUFACTURERS OF —

Ply Skin Protection — Plastic Coated Gloves for 25 Years

# **SPEAKMAN LIFE-SAVER EMERGENCY SHOWERS**

FOR A

## **Drenching, Sloshing Deluge of Water**

The moment an accident victim steps under a Speakman Emergency Shower, he is deluged with a flood that in a split-second douses flames or washes chemicals from the body instead of driving them into the skin.



- No holes to clog
- Withstands years of hard wear
- Slow, self-closing valve
- Flow up to 52 gal. per min.

### **Models available:**

- S-2075**—regularly furnished with chain to floor and floor flange
- S-2075**—modified with short chain and 8" diameter pull ring
- S-2075**—modified for horizontal installations
- S-2080**—free-standing frost-proof unit for outside installation
- S-2085**—with shower outside and valve inside the building
- S-2090**—platform operated unit

For more information about Speakman LIFE-SAVER Emergency Showers, write for Booklet S-75.

**SPEAKMAN COMPANY**  
Wilmington 99, Delaware

the operation can be provided with an effective enclosure type hood, natural draft ventilation is often satisfactory.

### **DISPOSAL OF CONTAMINANTS**

Equally as important as collecting the air contaminants is its proper disposal. Gases, vapors and mists may often be discharged to the outside atmosphere at a point where they will not recirculate around the premises in harmful concentrations.

Dusts, both harmful and nuisance, require the use of dust collectors in the system.

Recirculation of air from exhaust systems is not generally desirable, particularly when the air has contained gas or fumes. Where only nuisance dusts are involved, recirculation after cleaning is often permissible.

Recirculation is not desirable when dusts containing such substances as lead, silica, asbestos are handled.

Air coming from the cleaning device must fall within the permissible range for toxic or flammable dusts.

### **DUST COLLECTORS**

Methods of removing dust from the air exhausted by the system include:

1. Filtration.
2. Electrical precipitation.
3. Wet collectors.
4. Dynamic precipitation.
5. Supersonic flocculation.

**Filters** are porous mediums through which dust-laden air is drawn. Some are designed to collect dust in the form of a layer on the upstream surface. This is characteristic of cloth and paper filters. The thicker types, such as those of metal mesh or fiber glass treated with oil, have greater dust-holding capacity.

A filter should have:

- Low initial resistance to air flow.
- Reasonable length of service.
- Efficiency under changes of temperature and humidity.
- Low flammability.
- Reasonable replacement cost or ease of cleaning.
- Low maintenance cost.
- Freedom from odors.

**Electrostatic precipitation.** This method is highly efficient, particularly for fine dusts which are difficult to remove by other methods. It offers low resistance to air flow. First cost and maintenance cost are relatively high.

Portable units, recently intro-



# **PNEU-MUFFLER**

## **STOP EXHAUST NOISE**

of air-operated equipment  
with **ATOMUFFLER**

**4-44 Radial Full-Flow  
Muffling Action!**

*(Muffles-without reducing air-flow)*

### ● **FULL-FLOW ATTENUATION**

With Radial Full-Flow muffling, exhaust air is not restricted. Performs at top efficiency regardless of air volume or pressure. Sturdier construction and improved wear quality designed to give better service, efficient and longer trouble-free performance.

### ● **EFFICIENT NOISE REDUCTION**

Atomuffler stops 99.9% of objectionable noises of air-operated equipment. Completely eliminates injurious noise hazard. Easily installed, made in eight standard pipe sizes, economically priced.

### ● **IMPROVES WORKING COMFORT**

Protection from annoying exhaust noise and improved operating comfort are important user benefits. Prevents fatigue slow-down and frayed-jumpy nerves. Send for descriptive literature and name of local distributor.

**Recommended by Liability Insurance Companies**

**ALLIED WITAN**

COMPANY, INC.

Representatives In Principal Cities

CLEVELAND, OHIO



# COPPUS "BLUE RIBBON" VENTILATORS

identified by the blue band

## FOR WORKERS'

- Safety
- Health
- Comfort
- Efficiency

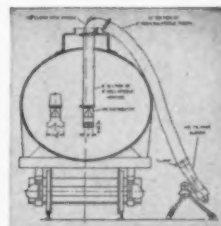
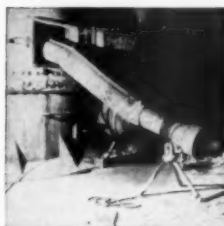
### VANO® Design "A" VENTILATOR



Vano Design "A" cooling interior of furnace, supplying fresh air through 10 feet of "Ventube" to provide safety and comfort during repair work.

Vano Design "A" delivering fresh air to cable manhole, expelling sewer gas, making entrance safe in a few minutes.

Vano Design "A" Ventilator plus a few accessories feeds large air volume into tank car, driving out fumes, stagnant or hot air for workers' safety and comfort.



Vano Design "A" supplying fresh air in Reactor Room of Synthetic Rubber Plant.

Vano Design "A" Ventilator supplying fresh air to men working in wing compartments, fuselages, etc.



Powered by a 1/2 hp motor, and equipped with the exclusive Coppus axial-flow propeller-type fan, this general-purpose blower delivers 1500 CFM of fresh air. It supplies ventilation for tanks, tank cars, drums, vats, underground cable manholes, pipe galleries, airplane wing compartments and fuselages, and other confined places. Weighs only 103 lbs. Uses 8"-diameter flexible canvas tubing ("Ventube").

### VANO DESIGN "C"



VENTILATOR-EXHAUSTER



Vano Design "C" equipped with 8" discharge tubing removing welding fumes.

Vano Design "C" equipped with two suction lines removing welding fumes for operators' safety.



For withdrawing welding fumes from confined places or directly from the welding rod ...or for expelling fumes or hot air from enclosed vessels. You can get it with 8" suction inlet for 8" non-collapsible tubing ...or with multiple inlet nozzles for 5", 4" or 3" suction hose. The discharge outlet takes 8" "Ventube". Powered by a 1/2 hp motor, it weighs only 85 lbs.

**COPPUS ENGINEERING CORP., 123 PARK AVENUE, WORCESTER 2, MASS.**  
Please send information on the Blowers that clear the air for Action.

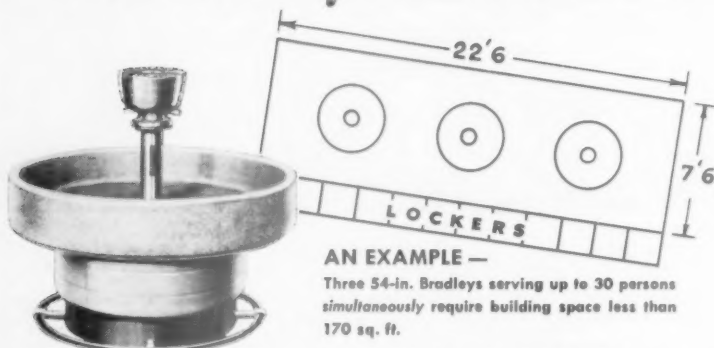
- |  |  |   |
|--|--|---|
| <input type="checkbox"/> in tanks, tank cars, drums, etc.    | <input type="checkbox"/> on steam-heated rubber processes. | <input type="checkbox"/> general man cooling.   |
| <input type="checkbox"/> in underground cable manholes.      | <input type="checkbox"/> on boiler repair jobs.            | <input type="checkbox"/> around cracking stills.  |
| <input type="checkbox"/> in aeroplane fuselages, wings, etc. | <b>COOLING:</b>  | <input type="checkbox"/> exhausting welding fumes.  |
| <input type="checkbox"/> on coke ovens.                      | <input type="checkbox"/> motors, generators, switchboards. | <input type="checkbox"/> stirring up stagnant air wherever men are working or material is drying. |
|  | <input type="checkbox"/> wires and sheets.                 |   |

(Write here any special ventilating problem you may have.)

NAME .....  
COMPANY .....  
ADDRESS .....  
CITY .....

**COPPUS "BLUE RIBBON" PRODUCTS — Designed for Your Industry, Engineered for You**

## Help Cut New Building Costs with Bradley Washfountains



Made in 54-in. and 36-in. full-circle and semi-circular (wall type) vandal-proof models in precast stone, vitreous enamel, and stainless steel.

### AN EXAMPLE —

Three 54-in. Bradleys serving up to 30 persons simultaneously require building space less than 170 sq. ft.

**ALL WASHROOMS  
CAN BE MADE SMALLER**

## Each Bradley Washfountain Serves 8 to 10 Simultaneously

- reducing space required by 25%
- reducing water consumption
- reducing installation costs—80% fewer piping connections
- reducing janitor and maintenance work



Sanitary wash fixtures—Bradley Washfountains—are used in mills and factories, large and small, all over the world.

*And—Beyond These Economies—There is the Ultimate in Sanitation*



Removing feet cuts water supply immediately—no wasted water.



Write for our new 28-page well illustrated Cat. 5601.

**FOOT CONTROL** and the central sprayhead eliminates faucets and faucet contacts that may lead to spreading of infectious diseases . . . There is no chance of collection of used water in the bowl for it is *self-flushing* . . . Thousands of factories, schools, institutions have Bradley-equipped washrooms. How about yours?

**BRADLEY WASHFOUNTAIN CO.**  
2237 W. Michigan Street  
Milwaukee 1, Wisconsin

**BRADLEY**  
*Washfountains*

Distributed Through Plumbing Wholesalers

duced, are helpful in removing dust and smoke from small rooms.

Precipitators are less effective in collecting large particles moving with considerable force. For high concentrations of dust they generally require pre-cleaners. They are valuable when the manufacturing process requires a practically dust-free atmosphere.

A combination of viscous filter and electrostatic precipitation with a self-cleaning feature on some models is available. It solves the problem of dust capacity and of heavy particles.

**Cyclones.** A cyclone consists of an outer cylinder fitted with an inverted cone-shaped hopper and an inner concentric cylinder which serves as a discharge duct. Air from the main duct of the exhaust system, under high velocity, enters the large chamber where the air is given a circular motion. The heavier particles are thrown to the outer wall by centrifugal force and fall along the wall. Air escapes through the top.

Cyclones are most effective for large particles, such as sawdust, shavings, heavy lint, etc. After passing through them, air cannot be returned to the workroom without further filtering. Cyclones are relatively inefficient for removing small particles.

**Dynamic separators** combine fan and collector in one unit. In form this type of separator is somewhat like a cyclone, but the centrifugal separating action is performed by the revolving blades. It is more efficient than the cyclone.

In some types water spray is introduced with the dust at the inlet. Wet collection increases efficiency for fine dusts.



Portable electric precipitator removes fine particles of dust and smoke. It is suitable for conference rooms and small workrooms where dust-free conditions must be maintained. (Raytheon Manufacturing Co.)

**Wet collectors** use several devices for obtaining contact of water with the exhausted air so that dust particles form a sludge. One type consists of sprays or water curtains through which dust-laden air is drawn. These are efficient collectors for many types of dust.

An important application is in the prevention of dust explosions from grinding aluminum or magnesium.

**Supersonic flocculation.** Suspended dust is passed through a field of supersonic vibrations, inaudible to the human ear, generated by a high-frequency siren. Vibration flocculates the fine particles, and the aggregates are then collected by cyclones or other measures for collecting relatively coarse particles.

### GENERAL MEASURES

**Personal protective equipment** is needed where exposure is occasional or where complete protection is not practicable. Removal of the hazard at its source should remain the objective.

**Sanitation and housekeeping** must receive constant attention. Otherwise equipment will lose its effectiveness and unhygienic conditions develop.

**Supervision and training** of employees, particularly in hazardous operations, are important. Workers exposed to toxic substances should receive frequent physical examinations.

**Medical control** is not a primary method, but is an important check on other methods. Maintenance of engineering control is sometimes inadequate and symptoms of absorption of toxic materials by a worker may be the first real warning.

The safety department should be notified of the introduction of new materials and processes so that possible hazards may be assessed and safeguards provided.

### AIR CONDITIONING

Control of temperature and humidity as well as air motion and removal of contaminants are necessary for a comfortable environment. This means cooling and dehumidifying the workroom air in summer and heating and humidifying it in winter.

Comfort air conditioning for hot weather is now almost universal in theaters and is found in even the less pretentious restaurants. Each year also finds more and more stores and offices air conditioned and sales of room air conditioners are growing.

In industrial plants, control of temperature and humidity is still influenced by the requirements of the



don't let heat fatigue  
"KO" your workers  
this summer



be sure you have



Salt Tablets

when you need them!

buy now and save

**EARLY  
ORDER  
DISCOUNT**

for orders received  
before March 31, 1956

Get the jump on hot days ahead . . . order MScO Impregnated Salt Tablets *now*. Your workers will have them the first day temperatures soar . . . you'll save by buying at "early order" prices. Tablets will be shipped from your local safety distributor's stock to expedite your order. And remember, when you buy MScO, you buy *impregnated* salt tablets—with *controlled action* to replace needed body salt *immediately*, but at a gradual rate to meet the body's needs. In *expendable* dispensers with bracket for wall locations, or in handy plastic vials for field workers. Write Medical Supply Company for literature and prices, or see your nearest MScO distributor.



100 Vials



500 Tablet Dispenser



1000 Tablet Dispenser

**Medical Supply Company**  
Rockford, Illinois • In Canada, It's Safety Supply Company

product which may not coincide with the most comfortable conditions for persons. However, more attention is being given to summer comfort and the possibility of raising human efficiency which slumps seriously as temperature and humidity rise.

A workroom temperature much lower than that outdoors is not desirable. It is recommended that the interior of a building for public occupancy be cooled not much more than 10 degrees below the outside temperature.

Air conditioning with modern lighting makes the plant practically

independent of the climate outdoors. A self-sufficient building may be windowless or it may have fixed sash to give occupants a glimpse of the outdoors for psychological reasons.

### Cool Comfort for Hot Jobs

Operators of overhead traveling cranes are often subject to extreme heat and humidity, as well as to gases, vapors and dusts from operations below.

To improve conditions, cab coolers have been designed. These coolers



Cab cooler on a full-vision cab of a 250-ton stripper and extractor crane at Ford River Rouge plant. (Dravo Corp.)



"Doc! It's like fighting DERMATITIS with an armored glove."

Except WEST protective gloves are invisible.

- quickly applied
- comfortable to wear
- easily washed away.

For skin exposed to oils, dust, grease and grime:

- use PROTECTIVE CREAM #211.

For skin exposed to acids, alkalis and inorganic chemicals:

- use PROTECTIVE CREAM #311.

For skin exposed to organic solvents, acetates and cutting oils:

- use PROTECTIVE CREAM #411.

WEST PROTECTIVE CREAMS protect against hundreds of troublesome industrial irritants.

Too, they're antiseptic. Inhibit harmful bacteria with Hexachlorophene. And most important, they protect for extended periods of time.

LET a specially trained WEST representative tell you more about WEST PROTECTIVE CREAMS and the WEST Dermatitis Control Program. Just write. Or telephone your local WEST office.

Largest Company of its kind in the World



Branches in Principal Cities • In Canada: 5621-23 Casgrain Avenue, Montreal

### FREE BOOKLET

Use your business letterhead to request our 24 page booklet on controlling skin irritation.

WEST DISINFECTING COMPANY  
Dept. 7, 42-16 West St.  
Long Island City 1, N. Y.



are self-contained units which need only an electrical connection. They supply clean air, cooled and dehumidified to the cab.

Locomotive cranes, which often operate in hot locations, can be provided with similar equipment.

These units can also be used to heat the cab in cold weather.

For pulpits and other control locations in steel mills where heat, dirt or fumes create uncomfortable and hazardous conditions, similar equipment has been designed.

### Washrooms and Lockers

—From page 72

concrete with an abrasive surface. A curb 4 inches high should be erected around shower stalls, to keep water within the enclosure. With adequate slope to the drain a curb may not be necessary.

Painting the curb a contrasting color helps to prevent tripping.

**Emergency showers.** Quick-acting showers should be installed at convenient locations where caustics, acids and other corrosives are handled.

**Eye fountains** are also desirable where chemicals are handled. Prompt flushing of the eyes is recognized as the best first-aid treatment for any chemical in the eyes.

**Fungus infections.** Warmth and moisture in shower rooms are conducive to the spread of fungi that cause "athlete's foot." Floors and stalls should be scrubbed daily with detergent and water as a general



# Brulin Safety-Solv

## All Purpose Industrial Cleaner and Degreaser

**Dilutes  
with Water**

## Minimizes Fire and Toxicity Hazards

- Removes oil and grease deposits.
- Excludes the use of hazardous inflammable solvents.
- Contains no chlorinated solvents, carbon tetrachloride or similar toxic compounds.
- Does not require special protective clothing.

**BRULIN'S SAFETY-SOLV** is another advancement in the compounding of safety solvents. Brulin's Safety-Solv factors governing effectiveness have been increased . . . and the hazards of use reduced to a minimum.

**TOXICITY**—Does not require special ventilating equipment or protective clothing.

**FLAMMABILITY**—It will not burn when diluted with water as directed. The original concentrate, undiluted, has a flash point of close to +200° F.

**HARMLESS TO METALS**—Does not corrode metals including aluminum, magnesium, copper and plated materials. Will not affect paint, plastics and rubber when used as directed.



### BRULIN & COMPANY, INC.

2939 Columbia Avenue • Indianapolis 7, Indiana  
1793 12th Street • Oakland 7, California

National Safety News, March, 1956

sanitation measure. A germicide in the scrub water is an added precaution.

Careful drying of the feet and use of an antiseptic foot powder are helpful in preventing infection. Preparations for toughening the skin increase resistance to fungi. Pans of antiseptic solution have been found ineffective or worse. Objection to this type of treatment is overcome in a device which dispenses a fresh solution over the feet when the shower user steps on the grating.

Disposable paper slippers or wooden clogs keep the feet from contact with the floor. They need not be worn in the stall where the floor area is kept mechanically clean by the flow of water.

### SKIN CLEANSERS

Three types of skin cleansers are in use: (1) Soaps (2) Sulfonated oils (3) Synthetic detergents.

**Soaps.** Powdered soaps are generally more economical than cake soap. These consist principally of powdered hard soap and water softener, to which a scrubbing agent may be added. Cornmeal, a commonly used scrubber, may be coarse or fine. Most of these soaps can be used with hard water.

**Organic solvents,** such as naphtha, turpentine and carbon tetrachloride, should be avoided. Some, particularly carbon tet, are toxic, some are flammable, and all have a drastic defatting action. If they must be used to remove substances like lacquer that resist ordinary cleansers, emollient creams help to offset loss of natural skin oils.

**Liquid soaps** are generally satisfactory where a scrubber is not desired. They are frequently used in office washrooms and in first-aid rooms.

Soap should contain no free alkali and should show a low pH in dilute solution. This can be determined before purchasing.

**Sulfonated oils** are useful for dry and soap-sensitive skins. They are frequently used where workers are exposed to the defatting action of petroleum oils and organic solvents.

**Synthetic detergents** of several types, gentle but effective, are used in many industries. They are particularly useful for removing oil, wax and tar.

**Waterless skin cleansers** are a recent development. They are said to be non-irritating and effective in removing grease and grime. Por-

## THOUSANDS INSTALLED IN '55

# Sani-Dri Saves All Towel Costs!

**Cuts Maintenance . . .  
Automatically  
Eliminates Litter!**

No. 7-A Sani-Dri  
in school



Not 30% . . . not 60%  
... you get 100% savings  
on towel costs with  
Sani-Dri . . . plus 85% savings  
on maintenance overhead.  
No more empty towel  
cabinets . . . no messy, unsanitary  
washrooms . . . no fire hazard . . .  
no clogged plumbing. Sani-Dri gives  
you 24 hour automatic drying  
service that is clean and sanitary,  
plus savings never possible with  
towels. Underwriter's Seal and  
full 2 year guarantee!



No. 8-A Sani-Dri in  
public building

**HAIR DRYING** is now considered a must in girls' shower rooms in today's schools to prevent colds and sickness. Sani-Dri also used to dry athletic equipment—ideal for pools, etc.

### WRITE TODAY!

Get the actual savings facts about the original and only complete line of electric hand and hair dryers.



**THE CHICAGO HARDWARE FOUNDRY CO.**  
1036 Commonwealth Avenue  
North Chicago, Illinois

## BRIDGE THE "DANGER PERIOD" WITH HAWS EYE-WASH FOUNTAINS

Even though summoned medical aid arrives as rapidly as possible, time elapsing between occurrence of eye accidents and a physician's care is too often the period when permanent harm is done.

Bridge this "danger period" with HAWS Emergency Eye-Wash Fountains that permit injured workers instantaneously to wash injurious matter from their eyes with clear water at safe controlled pressure.



Available with HAWS Drench Shower Attachment to form an "emergency first aid station" for your employees' protection. All HAWS Safety Equipment is designed and manufactured in cooperation with leading safety engineers.



*Write for full details today!*

**HAWS DRINKING FAUCET CO.**

1439 FOURTH STREET (Since 1909) BERKELEY 10, CALIF.



**STOP  
FUMES  
at their  
source**

You'll find Ruemelin Fume Collectors ideal for stopping noxious welding fumes at their source. Counter-balanced inlet hood stays in working area, automatically. Improves working conditions . . . lessens fatigue . . . paves the way for increased plant production. Thousands in everyday service. Write for Fume Collector Bulletin No. 37E.

(Left) "Illustrating the 15 ft. reach collector. Handles large or small work. Units available with 9 ft., 15 ft., 17 ft. and 20 ft. reach."

**RUEMELIN MFG. CO.**

MFRS. & ENGRS. • SAND BLAST & DUST COLLECTING EQUIPMENT  
3885 NORTH PALMER STREET • MILWAUKEE 12, WISCONSIN, U. S. A.

table dispensers, including a receptacle for waste towels, can be set up quickly where needed and without plumbing connections. Dispensers for paper towels can be attached.

**Germicidal cleansers.** Ordinary soaps and synthetic detergents remove transient bacteria from the surface but are not effective in reducing those embedded in the skin. Many germicides, such as phenol compounds, have been tested as ingredients of skin cleansers, but required high concentrations that made them unsuitable for daily use.

Hexachlorophene, described by various trade names, has been incorporated in soaps and detergents used for medical, surgical and deodorant purposes and for general industrial and home use.

### DRYING THE SKIN

The community towel is still found in some plant washrooms in spite of legislation and public opinion. It should be made a hygienic outlaw.

**Paper towels** meet sanitary requirements and are economical and convenient. Dispensers should be kept filled and receptacles for used towels provided.

Recessed waste receptacles take one more object off the floor, improving the appearance of the washroom and making cleaning easier.

**Mechanical hot air driers** are acceptable from the hygienic standpoint. They are foot operated and may be of the pedestal type or recessed into the wall. Equipment should be well grounded and the electrical connection permanently installed without extension cords or plugs.

**Towel services** are used by some establishments, usually stores and offices. For industrial use, individual towels kept in lockers may not be changed often enough and they may come in contact with soiled work clothes.

### TOILETS

Toilets should be partitioned off from washrooms and lockers. Partitions of enameled metal are attractive in appearance and easy to keep clean. Partitions may be suspended from the ceiling or wall-mounted. Either type makes floor cleaning easier and quicker.

The oval-rim type of toilet with open-front plastic seat is most widely used. Foot-operated flush valves are favored by many.

The flushing mechanism should be rugged since employees often kick

the handle instead of operating it by hand. Flush valves should be equipped with vacuum breakers to avoid back siphonage.

Minimum number of toilets specified by *American Standard Code Z-4.1*:

No. persons	No. toilets
1- 9	1
10- 24	2
25- 49	3
50-100	5
Over 100	1 for each additional 30 persons

Toilets should be not more than 200 feet from any work place; preferably less than 150 feet.

Facilities for men and women should be plainly marked.

**Urinals** should be placed throughout the plant in convenient locations to avoid loss of time. One urinal for each 40 men is usually sufficient. Automatic flush valves use more water but are more effective in maintaining cleanliness since many persons seem reluctant to touch hand-operated valves.

Floors of toilet rooms should be of impervious materials, smooth and free from cracks. Tile and concrete

are satisfactory. Floor drains permit frequent flushing.

If possible, toilet rooms should have outside windows for light and ventilation. State or municipal regulations usually contain provisions for ventilation.

Switches for lights, electric driers or other equipment should be located so they cannot be operated by a person in contact with piping or other grounded conductor. Pull chains should be interrupted by an insulating link close to the fixture.

Where eating rooms are close to toilet rooms, covered receptacles for disposal of waste food should be provided in the lunchrooms. Eating lunches in the toilet room should not be permitted.

**Cuspidors** should be provided where needed and cleaned at least daily. The disposable type requires less handling.

#### LOCKERS


A well-equipped locker room is an aid to orderly habits and often to health.

Locker rooms should be fire-resistant, separated by fire walls from the main building.

Exposure to toxic substances calls

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CHICAGO 38

for extra precautions to prevent dangerous materials being carried away on clothing. Separate lockers prevent contact between street and work clothes. They should preferably be in separate rooms with shower stalls between them.

In such plants supervised washup periods and shower baths are important safeguards.

Sloping tops prevent the use of lockers for storage. Dust is conspicuous and easier to remove than with flat tops.

Built-in lockers extending to the

ceiling avoid dust-catching surfaces.

Lockers should be at least four inches off the floor to permit flushing the floor without wetting the contents of the lockers.

Forced ventilation supplied through perforations in the bottom of the lockers or through louvers in the doors is helpful in removing odors. If the work is heavy or wet, circulation of heated air through the lockers is desirable.

Lockers in which oil-soaked clothing, waste, or newspapers are kept create a serious fire hazard. Lockers

should have solid, fire-resisting sides and backs, but doors should have louvers for ventilation. Employees should not be permitted to leave clothing or rags saturated with oil or paint in lockers.

Baskets and hangers on elevating chains are used instead of lockers in some industries, such as mines and foundries. Damp work clothing can be dried out between shifts and

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#### WASHING FACILITIES

Max. No. Persons Using Facilities at One Time	No. Washing Facilities
15	1
30	2
50	3
For each additional 25 persons	1

Note: With circular fountains, 17 inches of outside rim equal one lavatory.

the drying is often hastened by steam coils at the ceiling. Such an arrangement conserves floor space.

#### REST ROOMS

A rest room should be provided in all establishments where 10 or more women are employed. Where there are fewer women and a separate room is not available, suitable space, properly screened, should be provided.

For 10 women, minimum space is 60 square feet, with at least 2 square feet for each additional woman employee. For less than 100 women at least one bed or couch should be provided; for 100 to 250 workers, 2 beds, and 1 bed for each additional 250 workers.

#### Diary

—From page 9

gested that he be excused, but Max said, "Stay with us, boy. We old men need your eyes."

Back in my office, Max took off his shoes, groaned over his aching feet, and then leaned back sleepily. At his own desk, Larry was sneaking in some work on the tabulations. I spoke sharply, "Put that away, Larry. Now, Max, pass judgment."

Larry looked at me in utter confusion, started to say something, then stopped. Max looked at me very sadly, and said,

"I would rather eat. Maurice is now fixing a dinner—for the three of us, I think. It would be nice to talk then, but till then, maybe, some little ideas would fill the time, no?



"You have a pretty bad shop, some ways. Oh, I know, not bad, not like six months ago. You have slicked it up a little and knocked off some rough edges, but it is still pretty bad.

"It was in the machine shop—there was an oil spill, and everybody was being very busy cleaning up the oil spill, like you must have told them so often. 'Good housekeeping,' you have said, I think, 10,000 times, maybe. So they see it is bad housekeeping and they rush to make it good, like good little children should.

"Only there is a broom left sticking across an aisle, while somebody runs for a can to put the rags in. And the janitor who comes in a hurry works right beside the grinders with no goggles on.

"And the nice little, obedient foreman up in the press department, he is so quick to speak sternly to the man who did not lock out the switch on the press he was fixing—yes, but the same foreman when he picks up that tote box to move it out of the way, does he lift with his legs? No, with his back flat, and every muscle strained, he lifts.

"And the guards—you should be ashamed. Protection you got, okay. But I could have saved you six, seven hundred dollars on those 1951 antiques with what I now got.

"Also, also, I would check again those spray painting booths—they may—I think I'm pretty sure—they do not have the air flow volume they need.

"But, now, the degreasers. Ach!" Max grabbed the sides of his head with the gesture that implies impending doom.

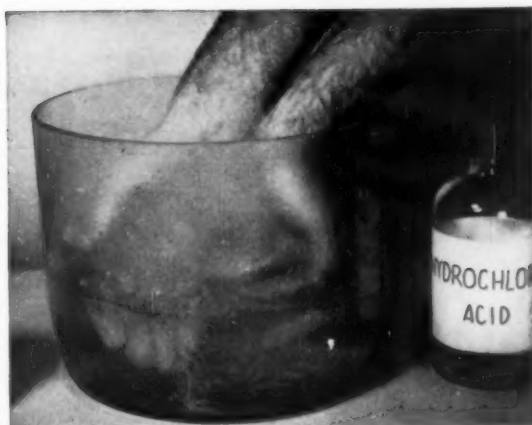
Larry spoke up, "I did a paper on degreasers once at Tech. Those we have are above standard."

Max smiled and said, "Whose standard?"

Larry mentioned the name of a good textbook.

Max waved his finger authoritatively. "Published in 1942, by a good man in his day. Boy—learn one thing from an old, tired peddler. What is yesterday in safety? I will tell you, and you listen well. Yesterday is always the day we made a big improvement in a terrible situation. And it was the day the textbook writer came in and made new standards on the basis of this big improvement. And what is today in safety? It is the day we decide that yesterday's big improvement was not enough, and we must have another big improvement, because as long as we can hurt one person, the situation is still terrible.

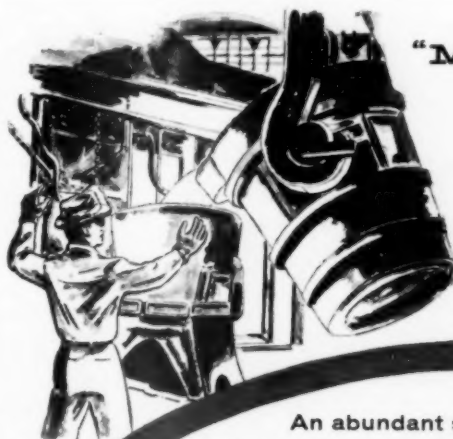
"Once I knew a good man. He was a fanatic in his time. He fought for



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a year to get basket guards on power belts in an old plant. When he wins, what? He thinks, 'Now it is done. Now I relax.' For a day, five years, maybe, he had a top safety record. Then he is back at the bottom, not because he goes backward, but because he stands still and the world goes ahead of him. It is so, always, and it will be so always. Never be a yesterday man. Not in safety."

Larry started to protest, thought a moment, kept his mouth shut. I could see that dawning in his mind was the first light of appreciation for Max that came to me when under the clownishness and the slow-moving fatness of him, I caught my own first glimpse of the solid, peddler's mind applied to the practical realities and the bright dreams of the work.

By the time the evening at Maurice's was over, and the talk had run out, and my order was in Max's book, Max had made another convert to his philosophy of safety and to his own line of equipment.

### ANNOUNCE DESIGN ENGINEERING CONFERENCE

A conference to study industry's problems in design engineering has

been announced by the machine design division of the American Society of Mechanical Engineers, sponsor of the event.

It will be held at Convention Hall, Philadelphia, May 14-17, concurrently with the First Design Engineering Show.

Four editors of leading publications in the engineering design field have been named by the ASME as an auxiliary papers committee to draft a program for the four-day meeting.

They are Colin Carmichael, *Machine Design*; T. C. DuMond, *Materials and Methods*; George F. Nordenholt, *Product Engineering*, and Frank J. Oliver, *Electrical Manufacturing*.

The program will lay stress on the need for attracting new men to the field, training them, and making adequate provisions for rewarding outstanding achievements. Other subjects will include cost reduction as an important element in design, selection of engineering materials, and the effect of the trend toward miniaturization.

On the floor of the show, about 150 companies will exhibit components and materials which go into the making of end products.

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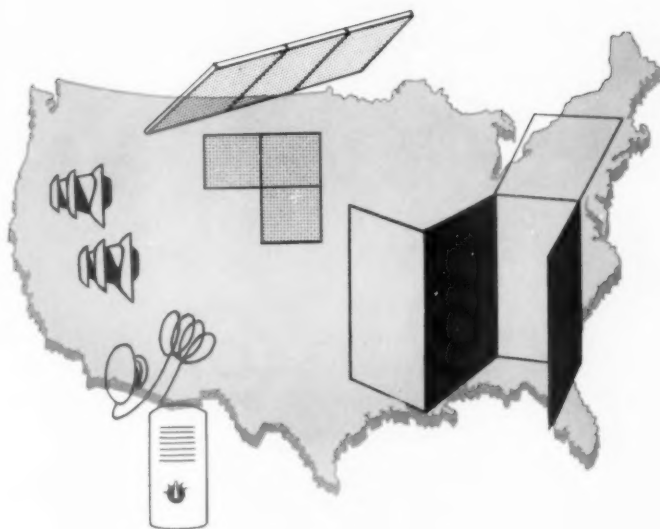
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# NOISE CONTROL



## IN THIS SECTION

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4

**N**OISE is one of the undesirable by-products of civilization. Both on and off the job millions of persons are exposed to sound levels much higher than those encountered 50 years ago.

Although noise control is a branch of industrial health engineering, it is given special discussion here because of its current importance to industry and public officials. Few subjects are receiving closer study and a vast amount of material has been published.

Compensation claims for loss of hearing have been increasing. Other items in the cost of excessive noise are fatigue of the individual, with increasing susceptibility to accident, and the depreciation of property values in noisy neighborhoods.

The problem is complex and the solutions neither simple or economical. Nevertheless, noise must be controlled in the interests of progress.

There are two principal methods for control—engineering and medical. The first deals primarily with the environment; the second with protection and supervision of the employee who must work in noisy surroundings.

# why HEARING TESTS play an important part in accident prevention...



## HOW A BELTONE AUDIOMETER CAN HELP

Many industrial accidents have been traced directly to the inability of workers to hear warning signals, the approach of vehicles or equipment. Most of these accidents might have been prevented by a comprehensive Industrial Hearing Test Program.

Such a program has proved invaluable in accident prevention wherever it has been used. It also provides a permanent record which, in many cases, has been the basis for handling compensation claims for hearing loss.

Medical, legal and safety directors who are vitally concerned with the hearing acuity of employees recognize the importance of threshold audiograms. For this reason, highly accurate and dependable audiometric equipment is of primary interest to industrial firms.

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# NOISE CONTROL

**NOISE** has assumed a position of national importance. Business and industrial leaders, insurance companies and research laboratories are becoming increasingly aware of the employer's liability for impairment of hearing attributable to employment. And apart from potential claims, a noisy plant is not regarded as a good place to work. The indirect cost of noise in poor employee relations and high turnover may be substantial.

Noise, as regarded by the industrial engineer and hygienist, means excessive and "unwanted" sound. Its components are:

- Intensity or loudness.
- Frequency or pitch.
- Quality or timbre.

## MEASUREMENT OF NOISE

**1. Intensity or loudness.** Intensity or loudness of noise is measured by a sound level meter, commonly called a noise meter. It consists of a microphone, an amplifier, a calibrated attenuator, three frequency response characteristics controlled by three taps and an indicating meter.

The unit of sound measurement is the "bel," or more conveniently the "decibel," which is one-tenth of a bel, named in honor of Alexander Graham Bell. A level of zero decibels represents roughly the weakest sound which can be heard by a person with very good hearing.

Noise levels produced by familiar sources of sound are shown in Table I.

**2. Frequency and quality.** The sound level meter measures only weighted or unweighted sound pressure. For a more complete description of sound, measurements must involve frequency and quality or timbre.

Different types of noise have different effects on the hearing mechanism. Noise of high intensity is believed to be more injurious to the hearing when it is of high frequency than when the frequency is lower. A locomotive whistle, for example, produces a sound of low frequency, while an air hose produces a sound of high frequency.

Two sounds of the same intensity and the same pitch may vary appreciably in the annoyance they cause because of the different harmonic makeup or quality.

To obtain information on the distribution of sound pressure as a function of frequency, measurements are made with a sound level analyzer. Depending on the use to which data will be put, the engineer may select one of several types of analyzers.

## INJURIOUS LEVELS

Limits for injurious noise are still vague and uncertain and the entire noise problem requires much more research and evaluation.

Some authorities agree that damage to hearing is likely to occur at noise levels above 90 db. It is necessary to start at some level and 90 db. has been selected as a level at which

one should become concerned about noise.

Other factors which must be considered besides actual intensity of noise are: total length of exposure, length of exposure period, whether sound stimuli are continuous or interrupted, length of interruptions, type and space of environment with reference to reverberation, age of worker, and presence of previous trouble.

It is recommended that various plant operations be tested with an approved sound meter, and that a record of the noise level be compiled by departments. This statement refers to the noise level which is more or less continuously present, and not the occasional high intensity noise.

In the absence of a sound level meter, an approximate idea of the noise intensity may be obtained as follows: Walk through the plant with another person having normal hearing and try to carry on a conversation. If shouting is necessary, the sound level is usually higher than 90 db.

## METHODS OF CONTROL

Remedies for the noise problem fall into two classes: (1) Engineering control; (2) Medical control.

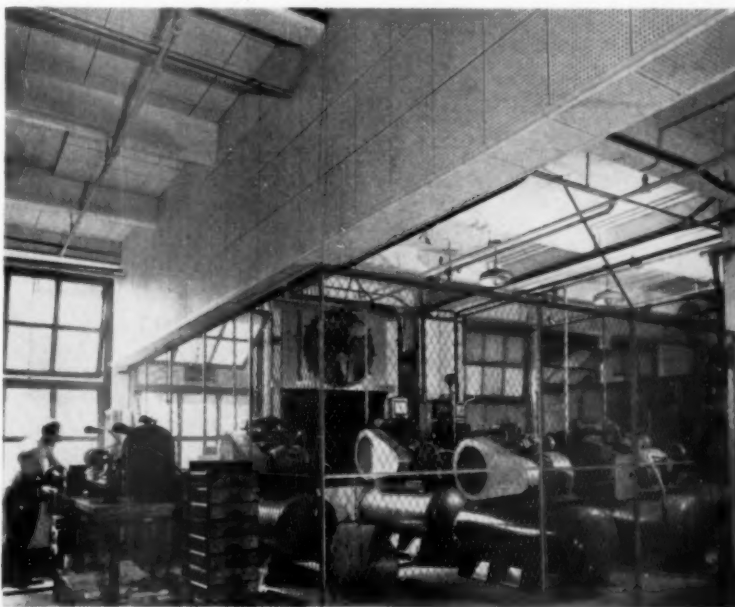
### 1. Engineering Control

Methods for reducing the noise level may be classified as follows:

**1. Control of noise at source.** The most fundamental attack on noise

**TABLE I**  
**Scale of Representative Sounds**  
Source of Sound                      Decibels

Zero Reference	0
Whisper	20
Low Street Noise	40
Conversation	60
Heavy Traffic	80
Critical Level	90
Subway	100
Airplane	120
Jet Engine	140



Acoustical treatment of ceilings and walls helps to muffle noise from machines.



Sound absorbers hung by wires from ceilings may be used where structural types of acoustical treatment cannot be applied. (Sonosorber Corp.)

hazards is removal at the source. With good engineering design much noise can be eliminated, as is evidenced by comparison for noise of a new streetcar or subway with the older ones. Also, most home appliances have been greatly quieted in recent years by proper design.

Much unnecessary noise results from worn and improperly maintained machines. It is important, therefore, that machines be kept in good operating condition.

**2. Substitution.** Another method of noise control is to substitute a less noisy operation, if possible. Spot, arc or flame welding may be substituted for riveting in some operations. While application of this method may be limited, nevertheless it should be considered.

**3. Isolation.** Frequently noise can be isolated so that its disturbing effect will be encountered by fewer people. A noisy machine may be removed from a room containing many people and placed elsewhere so as to expose only the employees necessary for the job. Well-insulated partitions and tightly-closing doors should always be provided between a noisy room and adjoining areas.

**4. Resilient mountings.** If heavy machines are firmly bolted to concrete or wood floors, the floor often becomes a huge sounding board. These not only amplify the original noise volume but help to spread the noise throughout the entire building. Rubber or other resilient mountings will usually reduce both the vibration and noise. Resilient floor coverings further reduce the noise level.

**5. Sound-absorptive materials.** Sound-absorptive materials are extremely useful for controlling noise in buildings. Hard surfaces, such as plaster and brick walls, reflect sound and cause reverberation. Sounds coming from all directions, as well as those coming from long distances, apparently undiminished, are very annoying.

The solution is the absorption of high frequency sounds by the application of acoustical materials. This consists of applying sound absorbents to ceilings and walls in the form of acoustical tiles, plasters, sprayed-on compositions, and blankets which have been prefabricated from porous material, such as glass wool.

Where structural treatment is not practicable, acoustical baffles suspended from the ceiling bring a substantial reduction in noise levels.

The problem of sound control by acoustical treatment is far from simple and help should be sought from experts in that field.

**6. Reduction of noise at the ear by protective devices.** There are situa-

tions where even thorough sound control may leave the noise level too high due to the nature of the industrial operation, as in the testing of jet engines. In such instances operators should be protected with properly designed and fitted ear defenders which will reduce the intensity of the sound reaching the hearing mechanism. This is as necessary for the protection of the ears as is the use of safety goggles for the protection of the eyes.

## EAR DEFENDERS

Four types of ear defenders are commercially available:

**1. Substance molded by the user.** Pliable balls of wax and cotton are molded by the user to fit his ears. This is the simplest, least expensive and least effective type of commercial protection but is much better than home-made plugs of cotton stuffed in the ears.

**2. Molded plugs (stopples).** This type of ear defender consists of molded plugs of neoprene or vinyl plastic or rubber, which are inserted into the ear canal.

**3. Muff types.** There are two designs of the muff-type ear defender. One consists of a spring headband to which is attached a pair of muffs constructed of plastic and sponge rubber, which fit over the ears. The other type consists of a spring headband to which are attached a pair of soft pliable plugs which fit inside the ear canals. The plugs are fabricated before insertion in the ears.

**4. Ear valves.** This type of protector is an ear filter made of non-corrosive metal and neoprene or soft plastic. When placed in the ear canal, the valve admits conversational tones but automatically closes and protects the inner ear from pressure caused by sudden loud noises or the concussion of explosions. It is more expensive than the simpler ear plug.

The amount of protection offered by good ear defenders varies somewhat with design, and may be considered to be in the range of 25 to 30 db.

Under conditions of extreme noise a combination of both the ear plug and muff may be worn, which gives superior protection to either device when used alone.

Individual preferences, as well as ears, differ considerably, so it is advisable to have several types on hand and let the user choose the type.

Well-fitted ear plugs provide protection against sound levels up to



Sound level meters are needed for accurate appraisal of noise. This is one of several types available. (General Radio Co.)



A booth which shuts out factory noises is needed for audiometric examinations. Portable booths are also available. (Lockheed Aircraft Corp.)

130-135 db. under most circumstances, even when exposure is prolonged and continuous.

## II. Medical Control

Where processes are on the noisy side, engineering control methods should be supplemented by a program of medical supervision. It is desirable to have a record of each employee's hearing, with periodic tests to detect possible deterioration.

The audiometer is the most standardized method of testing hearing loss. This is an instrument which produces tones of the purity and intensity required. One pure tone at a time is presented by headphone to the person under the test. The weakest intensity which he can hear is then found.

The measure of a person's hearing loss is the difference in decibels between the weakest intensity he can hear and the intensity that can just be heard by a person with normal hearing. Another frequency is then selected and the test repeated.

A standard technique is followed. A graph known as an audiogram is then plotted. Hearing loss in decibels is plotted on the vertical ordi-

nate against the log frequency on the horizontal ordinate. This gives a quick, accurate picture of the person's hearing acuity in the audible range.

Audiometer tests may be made by trained non-medical personnel. The hearing program, however, should be supervised by a physician.

Routine audiometer tests at regular intervals are advisable in addition to the pre-employment tests.

## HEARING AIDS

Persons with varying degrees of hearing impairment can work safely and efficiently in many jobs. In other occupations, however, deafness may be a handicap or even a hazard to the individual and his fellow workers. Using the skills of the deaf is an important phase of vocational rehabilitation.

In this rehabilitation program hearing aids are often of value. Properly fitted, they have enabled many persons to fill important jobs and live normal lives. Hearing aids require periodic servicing. The newer transistor types of hearing aids are smaller and more economical to operate.

A list of hearing aids meeting essential requirements is maintained



Recently developed "hearing glasses" enable those with impaired hearing to hear sound through both ears, improving hearing quality and enabling the wearer to determine the direction and location of sound. They also aid selecting desired speech or sound out of surrounding noises. Each temple of the frame is equipped with a complete hearing aid circuit including three transistors, a mercury cell battery—smaller in diameter than a dime—printed circuit, microphone, and other components. Each side has volume controls which can be adjusted to the hearing ability of the ear it serves. The hearing glasses also can be fitted for one ear. (Beltone Hearing Aid Company)



Work around jet aircraft engines requires the utmost in ear protection. This inspector inserts ear stoppers, with protectors of the ear muff type for added protection. (Chance Vought Aircraft, Inc.)

by the American Medical Association. Helpful information will also be found in National Bureau of Standards Circular 516, *Selection of Hearing Aids*.

Helpful information has been compiled in the Manual of Operation for an Industrial Hearing Conservation Program issued by the Committee on Conservation of Hearing, American Academy of Ophthalmology and Otolaryngology, 1136 West Sixth Street, Los Angeles.

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#### American Standards Assn.

The Relation of Hearing Loss to Exposure—Z24-X-2.

TABLE II  
Common Industrial Noise Levels

Source of Noise	Range in Decibels
Spinners, looms, lathes	80-95
Screw machines, punch presses, riveters, cut-off saws	90-95
Planers, routers, sheet metal, speed hammers	110-115
Drop hammers, chipping hammers	110-125

## What's So Special?

—From page 8

excel in routine, repetitive operations, and in those requiring finger or hand dexterity, assembling small parts, inspecting, packing, work requiring constant alertness and care, or the handling and use of light instruments. Many of them do, of course, but job placement should not assume that every woman has these qualifications.

The important points to remember are that women have less physical strength than men and that many jobs must be adjusted to their physical characteristics.

### SPECIAL ADJUSTMENTS

Accident records compiled for both men and women show no consistent pattern of higher or lower rates for either group. Machinery accidents, however, figure prominently in job accidents involving women. This may be due in part to the physical differences in men and women which are not always taken into account when operations are set up and guards are adjusted for the latter. Frequent injuries occur in connection with punch

presses, power cutting, and sewing and knitting machines.

In placing women in machine jobs ordinarily done by men, adjustments should be made at these points:

1. Guards should be set close enough that the woman's smaller hands cannot enter the openings.
2. Height of benches, distances away from piece parts, and foot pedals or hand controls should be reset to conform to the generally shorter stature and reach of women.
3. Extensions of levers on machines, tools, and equipment to produce the same force with less effort.
4. Use of lighter and longer wrenches to reduce strain on operators.
5. Suspension and counterbalancing of heavy hand tools where substitution of lighter tools is impractical.

**Seats.** There is some question whether women become fatigued more quickly than men and whether, in particular, their feet and legs tire more easily. However, there is a decidedly larger incidence of varicose veins among women.

Seats are vitally important for women workers. Arrangements should be made so that women can change from a standing to a sitting position. In muscular work, output has been found to increase from two per cent to 13 per cent when workers could alternate sitting and standing.

**Platforms** or other provisions for the proper placement of feet will eliminate haphazard placing of feet to rest on cartons or narrow parts of machines or guards. Platforms or mats also protect workers from standing on bare concrete floors, but it is important to consider the hazards from the standpoint of spacing between members, sharp or otherwise dangerous corners, and proximity to dangerous moving equipment.

### MATERIAL HANDLING

Particular attention should be paid to lifting. Women should be trained in proper lifting methods, just as men workers are, and their limitations must be remembered. The U. S. Department of Labor specifies the following weights, in compact form, as within the safe limits for male and female workers required to perform continuous or repetitive lifting operations:

Male workers—50 pounds.

Female workers—25 pounds.

Mechanized lifting and conveying devices, where possible, are the ideal solution. In providing such non-mechanical facilities as dolly trucks, carts, wheelbarrows, trays, etc., consideration should be given to pro-

tective handles properly placed, aisle space, floor condition, and whether the load has to be transported up and down stairs, ramps, or short inclines. Unnecessary lifting from one level to another and stacking above shoulder height should be avoided.

### VENTILATION

While good ventilation is important for any worker, it is especially important to women workers because of smaller lung capacity and fewer red corpuscles.

### SENSITIVITY TO IRRITANTS

When allowances are made for all factors, investigations to date suggest that the sensitivity to irritants depends primarily upon the type of skin the worker has and the kind of substances to which he or she is exposed and not upon sex.

For example, people with oily skins are more susceptible to irritation by oils, greases, and waxes, whereas those with dry skins are more likely to suffer irritation from fat solvents such as benzol and naphtha.

Workers should be warned against not only primary irritants handled in the course of a job, but also against agents ill-advisedly used to cleanse the skin, such as turpentine, thinners, etc.

Two facts should be stressed:

1. Occupational contact dermatitis is almost always an external problem.
2. It is not contagious.

### PROTECTIVE EQUIPMENT

Special clothing is needed by women:

1. To protect them from being caught in moving machinery; from the hazards of dusts, gases, fumes, or acids; from flammable materials; from flying and dropped objects; from material on floors; from ordinary dust and dirt; from fatigue.

2. To improve morale.

3. To protect the product from contamination.

Women require the same safety features in protective clothing and equipment as men, but greater attention to appearance is important, as many women resist the use of garments that are "unflattering."

The majority of women will listen to reason, however. Educational campaigns, exhibits where uniforms, head coverings, shoes, and other safe clothing are shown will help. Too, suppliers recognize women's vanity and offer clothing and equipment styled so it will be acceptable.

**Clothing.** Work clothing for women should be comfortable in any temperature in which it is worn. It should also be appropriate for the

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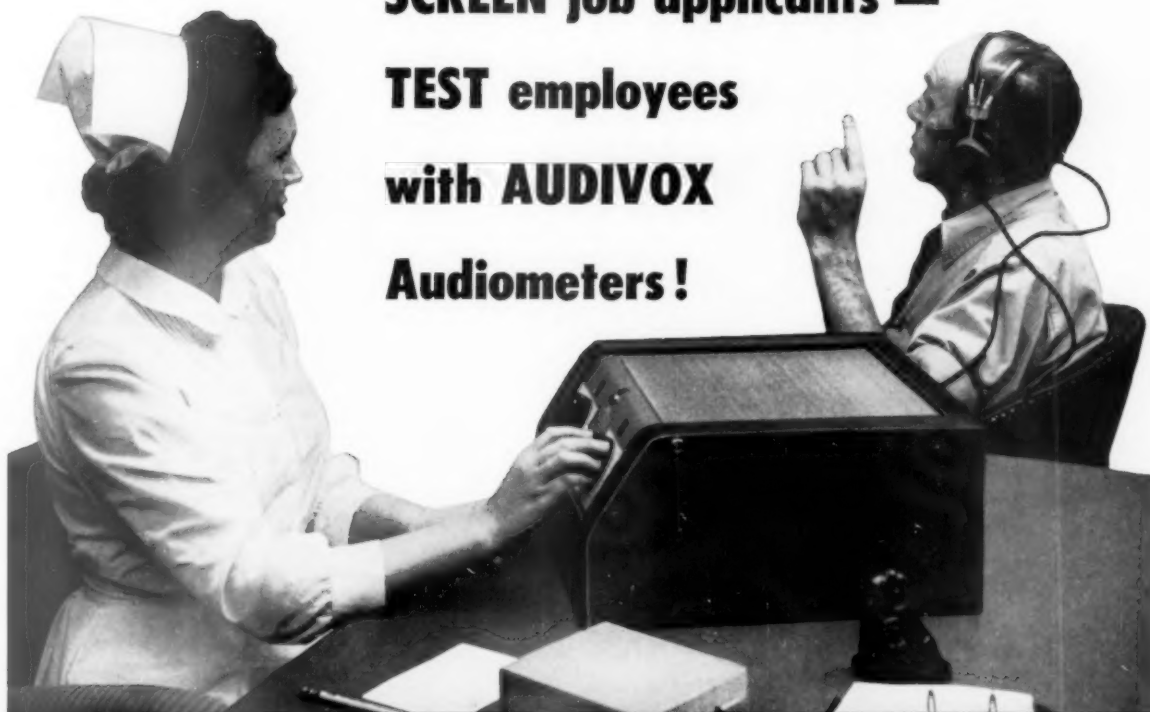
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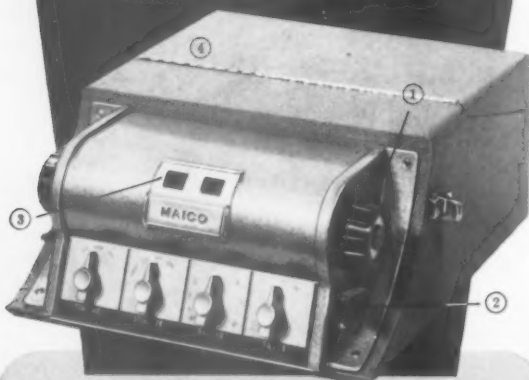
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job and, where possible, attractive. Suitable dresses, uniforms, and smocks are available and, where skirts are a hazard, slacks and coveralls are used. Clothing must fit and not interfere with worker's movements. Tight-fitting garments cause strain that increases fatigue. Outer garments should be devoid of loose sleeves, tails, full skirts, flounces, ties, lapels, and cuffs. No loose-fitting open sweaters should be worn. Jewelry, too, can be a hazard and should be avoided on the job.

**Head and hair protection.** Caps with stiff visors, hair nets, and ventilated turbans are available to protect hair from catching in moving belts, spindles, and other moving machinery and equipment. Paper caps are used in some food plants where the main object is to protect the hair and scalp from dust or to keep foreign material out of the product. These are usually provided by management and are changed frequently.

Static electricity is a hazard to consider, for it pulls the hair toward machinery where, if not confined, it can be caught in moving parts.

**Hand and arm protection.** Gloves should fit snugly, should not be cumbersome, and should extend a sufficient distance beyond the wrist to fit under sleeves.

Sleeves should reach from the wrist to the armpit and should be fastened at both ends. They should fit over the gloves and should be roomy enough to allow for flexing the elbows without sliding up and down the arm.

**Aprons** should be full and should cover the front of the body from well below the knee to the neck. They should be fastened around the neck and waist without loose ends.

**Shoes.** Women's work shoes should conform to standards that apply to men's—adequate in weight, comfortable and well-fitting—and should be equipped with steel toes where hazards so indicate. They should have low or medium heels, with no open toes or sling-back heels. High heels on the job should be discouraged, since women usually are more susceptible to falls than men. Shoes should provide proper support.

**Stockings.** Right size is important to reduce pressure and avoid fatigue from that cause. Cotton stockings are required in certain hazardous locations such as hospital operating

rooms, where synthetic textiles may cause static sparks.

**Sanitary Facilities.** Important to the morale of women workers are clean and adequate toilet facilities, properly equipped rest rooms, locker rooms, and showers. Good seating facilities, couches, and mirrors should be provided.

#### WORK AND PREGNANCY

With many married women at work, the effect of work on pregnancy is receiving much consideration. The problem also involves questions of social adjustment. Individual cases may need specific advice and treatment.

In general, pregnant women should not be employed in jobs involving heavy lifting or other heavy work or in jobs involving continuous standing and moving about. Nor should women be employed in the following types of work during any period of pregnancy: occupations that require a good sense of bodily balance, such as work performed on scaffolds or stepladders; jobs such as operation of punch presses, power-driven woodworking machines, or other machines having a point-of-operation hazard.

Although evidence indicates that non-pregnant women are no more susceptible than men to industrial poisons, some toxic substances are considered extra hazardous during pregnancy. They include:

##### Aniline

Benzol and toluol

Carbon disulphide

Carbon monoxide

Chlorinated hydrocarbons

Lead and its compounds

Mercury and its compounds

Nitrobenzol and other nitro compounds of benzol and its homologs

Phosphorus

Radioactive substances and x-rays

Turpentine

Other toxic substances that exert an injurious effect upon the blood-forming organs, the liver, or the kidneys.

A minimum of six weeks' leave before delivery should be granted.

#### REFERENCES

The Woman on the Job—National Safety Council, 1954. Contains extensive bibliography and summary of state laws concerning employment of women.

Women in Industry—American Mutual Magazine of Loss Control for Industry, November, 1952.

Women at Work—Bulletin No. 161, Women's Bureau, U. S. Department of Labor, Government Printing Office, Washington, D. C.

Handbook of Facts on Women Workers—Bulletin No. 242, Women's Bureau, U. S. Department of Labor, Government Printing Office, Washington, D. C.

Women in Industry, Their Health and Efficiency—A. M. Baetjer; W. B. Saunders Co., Philadelphia, 1946.

#### Placing the Handicapped

FORTUNATELY, comparatively few of the nation's blind, deaf, amputees,

neurotics, and people with chronic illnesses and allergies are so disabled physically that they are permanently unemployed.

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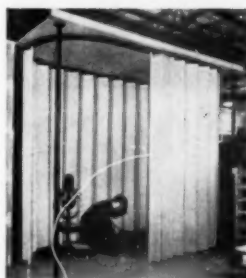
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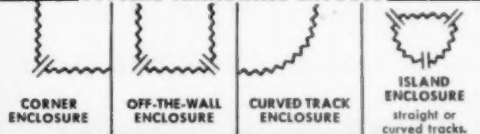
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the handicapped and accept workers with physical defects, even in times of plentiful labor supply. Most employers are willing to take care of their own employees who are injured on the job but hesitate to employ those who have been disabled elsewhere.

The experience of many companies has been that such people when properly placed, are productive and safe workers. The frequent objection—that employment of the handicapped causes a heavy increase in compensation insurance rates—has

little evidence to support it.

Placement of the handicapped requires, first of all, a thorough knowledge of work operations and working conditions of each occupation in the plant. This information should be evaluated by qualified specialists—production men, personnel men, safety men, physicians, and psychologists.

Physical requirements for each job should be established individually. They should be as strict as needed, but physical perfection is not essential to every job.

Information about available jobs in the plant should be assembled in easy reference form for use in the employment interview and in the final placement following the medical examination.

Supervisors should be informed of the importance of any limitations placed on the types of work an individual may do safely. The formal transfer of a worker from one job to another is only the most obvious situation in which this point should be considered. In production departments there is a constant temptation to shift men and work operations quickly to meet changing needs.

Personnel office record-keeping alone will not prevent misassignment and hazard in such situations, unless supervisors are made strongly conscious of the need of observing all restrictions on the work operations of handicapped employees—and unless they have at hand the information on these restrictions for each employee.

A systematic method of conveying the information from department to department in cases of transfers should be established.

**Aggravated injuries.** One objection to the employment of handicapped workers is that a disability may be aggravated, or spurious claims of aggravation may be made, involving the company in increased compensation costs.

There are, of course, many types of handicaps which may be aggravated by certain occupations. Workers so handicapped should not be employed in those operations.

The best defense against possible unjustified claims is a thorough physical examination, which records the physical status of the worker at employment and at intervals during his employment.

**Rehabilitation agencies.** A number of agencies are ready to serve the employer who is considering employing conspicuously handicapped persons. State and federal rehabilitation agencies and some insurance companies have information on the capabilities of the handicapped generally, and also contact with individuals who have profited from rehabilitation training.

Though the number of U. S. farms and farm workers has declined, the output of agriculture has increased enormously in the last 40 years, due largely to technological gains and mechanization.

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Installations already in use include:

—Hotels use TV to direct dispatching of elevators to floors where crowds are gathering and to pipe convention proceedings to rooms of guests.

—An atomic laboratory installation guides mechanical hands behind radiation shields, putting pieces in the right place and weighing chemicals and reading meters.

—A bank flashes master signature cards and account balances on TV screens before tellers.

—At a steel mill television monitors an 80-inch wide unending sheet of steel as it moves into a chute for cutting and rolling. Previously, steam obscured this point and a pileup could occur before an operator could avert damage.

—An electric power company uses TV for smoke control.

—Laboratory demonstrations are broadcast on five monitors at a school of dentistry.

—A large department store keeps watch over valuables through television and a central observation point.

—Journalism and television techniques are taught with the help of a closed circuit in a university.

—Another university's department of radiation has set up a unique system to detect unsafe radiation limits.

### Your Company's Records Need Protection

A business needs records to stay in business. It doesn't take much of a fire to destroy those records.

The threat of bombs has directed attention to the safekeeping of records. Many companies have had their records microfilmed and copies stored in a safe location.

Microfilm storage needs good protection as it is even more susceptible to fire damage than paper. Heat warps and shrinks film so that it cannot be run through a projector.

Many dispersed locations have been suggested for storage of record duplicates. A salt company suggests the use of its worked-out mines for

safekeeping of securities and vital documents that must be preserved as originals. The Germans hid art treasures in mines during World War II.

Records needed frequently must be stored at convenient locations. They must be protected against the ever present menace of fire.

Records may be divided into four classes:

1. Vital—reproduction would be costly or would not have the same value as the original.

2. Important.
3. Useful.
4. Non-essential.

The first two need special protection.

Vital records should be kept in a vault or safe that would preserve them even if the building should be completely destroyed.

Important records may be kept in the same vault as the vital records if space is available. If not, a fire-resistant storage room in a fire-resistant building should be provided.

Vaults or record storage rooms

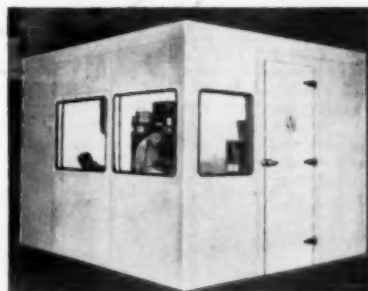
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will not need an automatic extinguishing system if cabinets and shelving are non-combustible. A fire-detecting and alarm system is desirable.

If combustible material other than records cannot be eliminated, automatic sprinklers or a carbon dioxide flooding system should be provided.

A vault independent of the building structure will stand even if the building burns and collapses. A basement location should be avoided because hot debris may "cook" the contents. There is also danger of damage by flooding.

Vault doors, safes and file cabinets are rated as to how long they will protect their contents against fire. Rates are determined by standard fire tests and range from ½ to 6 hours.

### Protection for the Maintenance Crews

Maintenance men do much to keep the plant safe as well as to keep the machines running. In performing their work they are exposed to a variety of hazards. Maintenance involves constantly changing condi-

tions rather than a routine pattern of activity. They need thorough training, dependable tools, and often protective equipment.

In addition to the regular tools, the maintenance man uses ladders, gloves, masks, goggles, safety shoes, protective hats, safety belts, respirators, rope, chains and other items of equipment.

The training program should include first aid and life-saving techniques. Where irritating, toxic or corrosive dusts, gases, vapors and fluids are present, training should include the characteristics of these substances and methods of controlling hazards.

Men must be trained to inspect rope, chains and hoists and to discard items that show excessive wear.

At the start of any job not of a routine nature, the crew should be called together to discuss the problems involved and methods of doing the work safely. If the job is complicated or hazardous, the safety director should assist in the planning.

Scale models may be constructed to determine clearances, methods of moving, and sequences of action.

Tools and tackle should be inspected for wear and defects before use. When special tools can be designed to make a job safer, the engineering department should be consulted for design and specifications.

### Rail Passenger Safety Near 1952 Low

Railroads of the United States last year chalked up their best passenger safety mark since record-breaking 1952, according to a recent announcement by William T. Faricy, president of the Association of American Railroads. In 1955, he disclosed, there was only one fatality for each 1 billion 800 million miles of passenger travel, a rate of 0.06 for each 100 million miles.

The 1954 rate was 0.07 fatalities for each million passenger miles. The all-time passenger safety record of 0.04 was set in 1952.

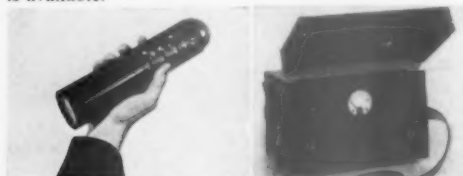
There were only four passenger fatalities resulting from train accidents in 1955 when passengers traveled 28.5 billion miles on trains. Fatalities to passengers caused by boarding, alighting, jumping or falling from moving trains numbered 12 last year, bringing the year's total of fatalities to 16.

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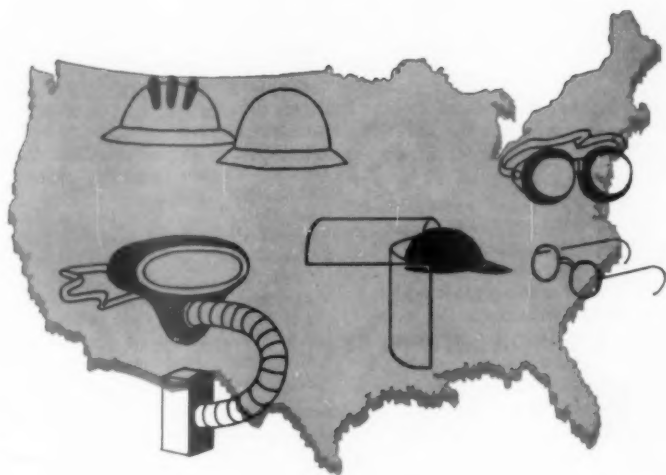
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# PERSONAL PROTECTION—PART I



## IN THIS SECTION

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5

**P**ERSONAL PROTECTIVE EQUIPMENT is the individual's second line of defense against injury but an indispensable one in many occupations.

Because of its size and scope, this section on Personal Protection has been divided into two parts. Part 1 deals with protection for the eyes, head and respiratory organs—the phases of the subject covered by Handbook No. 24 of the National Bureau of Standards.

Goggles, face shields, and hard hats have saved many a worker from crippling injuries, and the story of injuries prevented is appearing constantly in employee publications. Less spectacular but scarcely less important is the record of respiratory equipment in protecting man against air contaminants.

Surveys have shown the need for such protection. Eye injuries account for some 4 per cent of the injuries and 3 per cent of the total compensation. The percentage has been kept at a comparatively low figure in comparison to the hazards because of widespread use of eye protection.

Head injuries, other than eyes, constituted 6 per cent of all injuries and 9 per cent of the compensation paid.

# EYE CONSERVATION

- Protection of eyes and face against injury
- Detection and correction of visual defects

**PROTECTION OF EYES** against injury by flying objects, chemical agents, or radiant energy is an integral part of the industrial safety program. Eye protective devices are optical instruments and should be carefully selected, fitted, and used.

**Evaluating eyesight.** For pre-employment examinations and periodic reexaminations it is important to know the visual status of the individual. For this purpose, the familiar Snellen charts no longer are regarded as adequate.

For quick examinations of large numbers of employees, screening devices have been developed. Their use is to detect substandard vision and appraise visual skills for various jobs. They are not diagnostic.

Three devices for screening tests are now available. Two may be purchased while the third can be obtained only on a lease basis. Scoring cards are provided with the instruments and the service includes a certain amount of instruction in testing and evaluating the results. All three screening devices have proved highly satisfactory in years of use.

The tests take five minutes or less and may be given by trained laymen. Employees needing visual correction are referred to ophthalmologists or optometrists.

## TYPES OF PROTECTION

For protecting eyes and face against various occupational hazards, the following general types of equipment are used:

1. Goggles (safety glasses)
2. Face shields
3. Welding masks and helmets
4. Acid hoods

For detailed list and descriptions



Spectacle type goggle with side shields.

of various items of equipment for eye, head and respiratory protection, see accompanying definitions from *National Bureau of Standards Handbook H24*.

**Corrective lenses.** For visual defects, the wearer may have the correction ground in heat-treated lenses, or cover goggles may be worn over spectacles.

For optical reasons as well as convenience, corrective goggles are preferred. Most prescriptions can be ground in impact-resisting glass and in the improved plastics. Safety glasses will, of course, be heavier than ordinary spectacles.

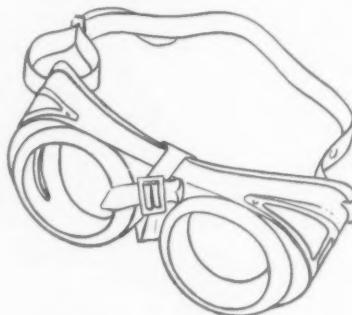
In prescribing corrective lenses for goggles or for ordinary spectacles, the refractionist should be familiar with the job. It is particularly important to know the distance of the work level from the eye.

**Cover goggles** are often preferred where the correction is complicated and expensive lenses would be subject to pitting on the job. They also have advantages where a near-sighted person requires deep minus lenses. These might be excessively thick at the edges yet too thin for adequate protection at the center.

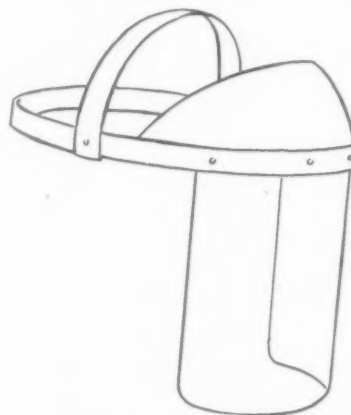
Cover goggles are available in the cup type with heat-treated glass lenses and the wide-vision type with plastic lenses.

## TYPES OF GOGGLES

Safety glasses are available in many types for practically every occupation. The protective medium may be heat-treated glass, trans-



Cup-type goggles for heavy duty.



Face shield of transparent plastic.

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parent plastic, wire screen, or light-filtering glass.

Heat-treated lenses in spectacle frames, or cup goggles offer basic protection. The nature of the job and its eye hazards determine the specifications.

**Spectacle goggles** are worn for light or moderately heavy work, such as grinding, machine work and assembling where working positions are not too close.

The frame must be rigid enough



to hold the lenses in proper position in front of the eyes. The nose bridge should be adjustable, or goggles should be available in enough sizes to fit various faces.

**Side shields** of metal or plastic provide protection against light objects flying from the side. They should be used where operations are close together, or where employees work together on the same operation.

**Cup goggles** are used for heavy grinding, machining, chipping, riveting, work with molten metals, and similar operations.

The cup should be wide enough to protect the eye socket and distribute the impact from any blow over a wide area. The cup should be flame-proof, corrosion resisting, and non-irritating to the skin.

**Mask-type goggles**, with frames of soft vinyl or rubber, offer protection



Light-duty plastic goggles.

against splashes of corrosive chemicals and exposure to fine dust. This type is obtainable with lenses of heat-treated or untreated glass or acid-resistant plastic. Some types may be worn over spectacles. The ventilated types are less troubled by fogging.

**Dust goggles**, leather mask type, for non-corrosive dusts, are made with heat-treated, untreated or filter

lenses. Wire screen ventilators around the eye cup provide air circulation.

**Miners' goggles** of corrosion-resisting wire screen are used for work underground and in other locations where fogging is a serious problem. The screen is coated a dull black to reduce reflection.

**Plastic lenses**, greatly improved in recent years, have qualities of optical glass in light transmission and freedom from distortion. Corrections may be ground in them. They are light in weight and resist fogging. They are useful for spotwelding, as molten metal does not adhere to plastic as readily as to glass. Plastic withstands considerable impact but is marred or scratched more easily than glass.

Plastic lenses should be cleaned with liquid cleaners and soft tissues

## EYE PROTECTION FOR VARIOUS JOBS

<p><b>TYPES OF EXPOSURE</b></p> <p>(National Bureau of Standards Handbook H24)</p>	<b>TYPES OF PROTECTION</b>									
	CUP GOGGLES	SPECTACLES	SIDE SHIELDS	PLASTIC EYE SHIELD	PLASTIC FACE SHIELD	WIRE SCREEN SHIELD	FILTER LENSES	RUBBER OR VINYL GOGGLES	HOODS	WELDING HELMETS
Heavy impact, large particles—Chipping, calking, some riveting operations, sledging in quarries.	•		•							
Moderate impact, dust and small flying particles—Scaling and grinding metals, stone dressing where quartz is not involved, some woodworking operations.		•	•	•	•					
Metal sparks and spatter—Electric spot and butt welding; no exposure to excessive energy or glare.			•	•	•					
Splashing metal—Babbitting, pouring lead joints for pipes, casting hot metal, dipping in hot metal baths.	•			•	•	•				
Splashing liquids—Acids and caustics, dipping in galvanized tanks, some japanning operations.	•				•			•	•	
Reflected light and glare—Long exposure to light reflected from snow, water, roads, etc.; incidental glare from furnaces, working near acetylene welding, etc.	•	•	•				•			
Injurious radiant energy—Moderate reduction in visible radiant energy—Oxyacetylene welding and cutting.	•						•			
Injurious radiant energy—Large reduction of visible radiant energy—Arc welding.										•



**SAF-I-SHIELD®**  
**FIRST** one-piece, low cost all plastic eye shield with first optically correct plastic lens.



**FIRST** coated and first impregnated salt tablets for relief of heat fatigue without "salt sickness."



**SAF-I-SPEC®**  
**FIRST** lightweight all-plastic safety spectacle.



**SAF-I-FLEX®**  
**FIRST** lightweight, comfortable flexible frame plastic eye shield, with replaceable lens.



**SAF-I-CHEM®**  
**FIRST** lightweight, large vision flexible chemical eye shield, with yellow frame for ready identification.



**"HALO"®**  
**FACE SHIELD**  
**FIRST** lightweight all-plastic shield with green non-glare, look-through spark protector.



**OPTILITE® LENS**  
**FIRST** strong shatterproof safety lens of compounded resins, available in either Rx or Plano. Half the weight with twice the strength of hardened glass.



**BUTYRATE FRAME**  
**SAF-I-SPECTACLE**  
**FIRST** with smart new Styl-ize shape and frames in choice of rich, modern colors.



**"AIRFLOW" SAF-I-FLEX®**  
**FIRST** metal screen ventilation (no air traps) integrally molded into frame, first correct pantoscopic angle of lens.

also made by USSSCO: SAF-I-WELD® Helmets (first welding headgear to use lightweight fiberglass); SAF-I-CUP Goggles for welders and chippers; "TUFFY"® Vinyl Aprons; SAF-HED® fiberglass Hard Hats; SAF-CO-METER® for detecting CO in the air.

## PIONEERS in modern industrial eye wear

### UNITED STATES SAFETY SERVICE CO.

Brings Safety Eye Wear "Out of the Pocket",  
Puts it On the Nose!

At the time of its founding 20 years ago, United States Safety Service Company was a distributor of safety equipment. It was soon learned that there was a great need for revising and modernizing much of the safety equipment then in use, to get better worker acceptance.

For this reason, USSSCO started to develop, design and manufacture its own products—taking advantage of new materials and new manufacturing processes wherever possible—in order to achieve up-to-date, attractive styling, true wearing comfort, and worker approval.

Today this policy is firmly entrenched, because of the immediate and wide approval of users—who over and over again experienced lower accident frequencies wherever USSSCO products were used.

Today, all items in the USSSCO line are of USSSCO's own design and manufacture. Dedicated to pioneering in modern industrial safety, USSSCO products represent the most advanced—and the most effective—safety equipment available.

USSSCO's facilities are modern and complete—research and testing laboratories—engineering—designing—modern manufacturing equipment. These facilities, combined with USSSCO's own nationwide sales offices, with personalized service, are large enough to take care of your entire safety eyewear requirements.

# ...and still **ANOTHER FIRST!**

USSSCO's NEW

## metal frame SAF-I-SPECTACLE

WITH WIDE ANGLE



### choice of lens material

ONLY USSSCO offers both Hardened Safety Glass and OPTILITE®, the revolutionary new shatterproof lens that has twice the strength and only half the weight of hardened glass, with superior resistance to pitting and fogging. Lenses of either material available in Plano or Prescription, single vision or bifocal.

### choice of temples

Newly styled metal spatula with plastic paddle tips — or riding bow cable with sweatproof non-flammable insulation.



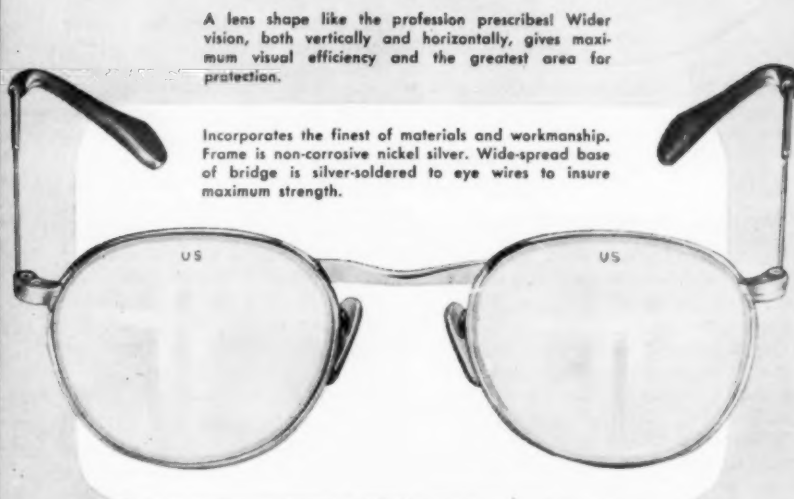
### choice of side shields

Matching side shields optional, either metal wire mesh for maximum ventilation, or clear or green plastic.



### new comfort with polyethylene nose pads

Velvet-soft, self-conforming, with large area and concave shape to fit slope of nose. Readily attachable or detachable without tools. Combination of metal frame and OPTILITE lenses offers FEATHER-LIGHT WEIGHT — wear them all day without burdening.



A lens shape like the profession prescribes! Wider vision, both vertically and horizontally, gives maximum visual efficiency and the greatest area for protection.

Incorporates the finest of materials and workmanship. Frame is non-corrosive nickel silver. Wide-spread base of bridge is silver-soldered to eye wires to insure maximum strength.

**shaped for smart appearance** — Workers willingly wear spectacles with this new attractive frame. Styl-Ize brings up-to-date styling in metal frames to the industrial field. Note also the new, modern bridge design.

**shaped for greater protection** — Styl-Ize lenses protect EACH EYE, more completely than ever before possible, because of greater area and individual fit.

**shaped for greater visual area** — Workers wearing Styl-Ize can see with greater freedom and efficiency. More work-area vision.

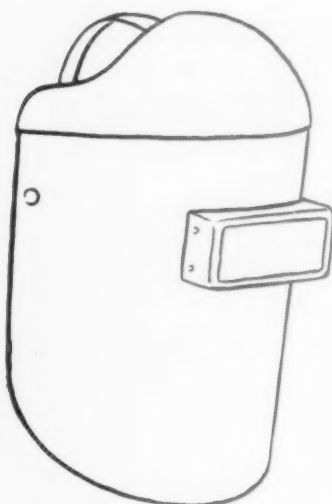
Pioneers in Modern Industrial Eye Wear

USSSCO products are developed, manufactured, and sold direct to the user by the United States Safety Service Co., through a staff of trained, full-time service engineers. Look in your phone book Yellow Pages for nearest sales office, or write us in Kansas City. A centralized warehouse located in the Heart of America insures prompt shipment of complete orders from stock, with quick delivery to all points by modern transportation.

## UNITED STATES SAFETY SERVICE CO.

BRANCHES IN PRINCIPAL INDUSTRIAL CITIES

Div. A-3, 1215 McGEE ST., KANSAS CITY 6, MISSOURI  
IN CANADA: PARMELEE, LTD., TORONTO & MONTREAL



Welding helmets of dielectric fiber with low heat conductivity are resistant to sparks, molten metal splashes and flying particles. Filter plate is protected by cover glass.

rather than silicone-treated tissues.

**Important considerations.** Ease of cleaning and sterilization is essential. Most types on the market meet these requirements.

Goggles should be fitted as close to the eyes as possible without touching the eyelashes to give the widest possible angle of vision.

Minimum permissible size for oval lenses is 44.5 mm. in the vertical dimension and 48 mm. in the horizontal. Round lenses should be 50 mm. in diameter.

Lenses should have no appreciable distortion or prism effect.

Strength of heat-treated lenses (resistance to impact) should conform to specifications of the Federal Standard Stock Catalog, the Government's official purchasing guide, Specification GGG-G-501B.

**Sweatbands,** worn across the forehead in hot, humid locations, help prevent fogging of goggles and spectacles.

**Non-fogging compounds,** applied to the lenses, help to keep the glass clear.

## FACE SHIELDS

**Face shields** of transparent plastic give eye and face protection on such jobs as metal-sawing, working with chemicals, buffing, sanding, light grinding, bottle manufacturing, etc.

They should not be used for welding, heavy grinding or where resistance to severe impact is necessary. Shields may be worn over spectacles.

Wire mesh screens are used for pouring low-melting point metals, as in babbitting. The mesh stops splashes of metal and allows better ventilation than a solid shield.

## HOODS AND HELMETS

**Hoods** (loose-fitting) and **helmets** (rigid frame) of various types are worn to protect the face and head against hazards which do not involve heavy impact.

These are equipped with windows but goggles may be worn underneath. If toxic fumes, dusts or gases are encountered, an air line should be supplied. As these hoods are rather warm, an air line may also be desirable for comfort.

Fabric hoods protect the wearer from nuisance dusts, paint spray, etc.

Fire-resistant duck and asbestos hoods are used for varying degrees of exposure to heat, as in furnace and burning operations and fire fighting.

Hoods and helmets of rubber, neoprene, plastic film, and fabric impregnated with rubber or plastic provide protection against splashes of acids, caustics, organic solvents, etc. Not all of these materials are resistant to all exposures and the manufacturer should be consulted.

## HARMFUL RAYS

Glass which filters out harmful ultraviolet and infrared rays is available in many types of goggles, face shields and helmets. These filter lenses are worn for welding and cutting, furnace and boiler observation and other operations where there are high temperatures and excessive glare.

**Didymium glass** is used for protection against bright yellow encountered in glass blowing and similar operations. It is also useful for some precision operations in laboratories.

**Melter's goggles** of cobalt blue glass come in spectacle and cup types in graded shades. Lenses with color in the upper half and clear glass in the lower half are also obtainable.

**Sun glasses** are not effective ray-filter glasses for most industrial exposures. They are designed for protection against discomfort caused by

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## Eye, Head and Respiratory Protection — Definitions

National Bureau of Standards  
Handbook H24

**Protector.** A device placed in front of or over the eyes, face or head to afford protection from the hazards in industrial processes or from the natural elements.

**Goggles.** An optical device worn in front of the eyes, whose predominant function is protection to the eyes only.

**Face Mask.** A device worn before the eyes and a portion or all of the face, whose predominant function is protection to the eyes and face.

**Helmet.** A rigid device worn by the operator which shields the eyes, face and neck, and a portion or all of the other parts of the head and is held in place by suitable means.

**Hood.** A non-rigid device which completely covers the head, neck and portions of the shoulders so as to exclude dust and flying particles.

**Shield.** A device held in the hand, or supported without the aid of the operator, whose function is protection to the eyes and face.

**Gas Mask.** A device worn on the face, and so arranged that the inhaled air is drawn entirely through a canister which cleans it chemically.

**Supplied-Air Respirator.** A device designed to supply the wearer with air suitable to breathe while surrounded by a contaminated atmosphere, and to prevent the latter from being inhaled.

**Hose Mask.** A supplied-air respirator having a tight-fitting facepiece to which is attached a hose through which air may be forced by a blower, and through which the wearer can inhale whether the blower is operating or not.

**Air-Line Respirator.** An air-line respirator is a supplied-air respirator designed to be connected by a hose to a supply of fresh air under positive pressure sufficient to maintain a continuous flow into the facepiece.

**Filter Respirator.** A device designed for the wearer to inhale the surrounding atmosphere after it has passed through a filtering medium to remove the impurities. The filtering medium may chemically absorb or mechanically obstruct the impurities.

**Cartridge-Type Respirator.** A filter respirator whose filtering equipment is carried in one or more cartridges mounted on the facepiece. Such a respirator may be a mechanical filter respirator, a chemical filter respirator, or a combination of both.

of Head, Eyes and Respiratory Organs, Safety Code for; Z2-1938. (Handbook H24, National Bureau of Standards. Under revision.)

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### ...For Cup Goggles

that provide the utmost in eye protection. The complete range of Willson goggle styles meets every eye protection need.



#### Convenient Kover-Mor®

This roomy style CC70 goggle is roomy enough to go over almost any style of personal glasses. Rigid top bar makes them easy to put on and take off with one hand.

**LOOK TO  
WILLSON**

### ...For Respirators and Gas Masks

for almost any respiratory hazard. The Willson line carries more Bureau of Mines approvals than any other.



#### Interchangeable Series 800

This is the first truly interchangeable respirator. It requires no additional parts or accessories to make use of 4 different cartridges and 4 different filters or combinations of both.

### ...For Safety Spectacles

that combine the protection your workers need with the style and comfort they want.



#### New Style WFH

Handsome safety spectacle with new lens shape in frames with demi-amber overlay on upper half of crystal butyrate.



#### Exclusive Contour-Spec®

Patented hinged bridge makes this spectacle the most comfortable to wear. Provides full closure around eye cavity.

### ...For Hard Hats and Caps

in either lightweight Fiberglas, in 5 colors, or fabric reinforced Phenolic Resin, the strongest hat shell made. Choice of four suspensions to suit your individual requirements.



#### Super-Tough Phenolic

This toughest of all safety hats is reinforced with ten individual die-cut pieces of sturdy duck and molded under pressure to withstand repeated drop-ball tests *without fracture!*



**WILLSON**  
205 Washington Street,



Over 300 Safety products  
carry this famous trademark

**PRODUCTS, INC.**  
Reading, Pennsylvania

# COVER GOGGLES

## FOR COMPLETE PROTECTION



### SOFT VINYL FRAME

For Safe, Comfortable, Form-fit

**Model 440 SV**—clear frame **460 SV**—green frame

Heavy Impact Goggles with replaceable, optically perfect, methacrylate lenses.

Clear Lens (C) .125" thick  
Green Lens (G2) Medium (G4)  
Dark (G6) .080" thick

**Model 441 SV**—clear frame **461 SV**—green frame

Average Impact Goggles with replaceable, optically perfect, acetate lenses.

Clear Lens (AC) .060" thick  
Green Lens (AG) .050" thick

**Models 490 or 491** — opaque black frames

Furnished with Stac-Vent only  
Methacrylate Lenses: same as 440  
Acetate Lenses: same as 441

**STAC-VENT (SV)** . . . a new principle in goggle ventilation, proven to provide clearer fog-free vision, more comfort and greater safety. Other types of ventilation available: Regular Ventilation (RV), Screen Ventilation (CV), or No Ventilation (NV).

**Safe, Shatterproof Lens Easily Replaced.** Eye Savers lenses will not shatter or splinter with impact . . . will not pit. Lenses are easily replaced by removing the "lock bar" that positively locks the lens in the frame. No special tools needed. Lenses are interchangeable in all Soft Vinyl Frames.



**Fits Over Any Prescription Frame** — Extra wide 6" lens in the large vinyl frame provides ample space for metal or horn rimmed glasses. Frame forms a bumper that prevents the lens surface from touching when goggle is laid flat on a table or bench.



**Safer, More Comfortable to Wear** — Eye Savers, soft Vinyl frames form-fit any shape face comfortably. Flanged nose bridge fills the gaps around the nose to assure greater protection. Adjustable, elastic headband holds goggles in position.

### SOFT VINYL

Black Frame



#### WELDING GOGGLE Model 492

Large opaque black vinyl frame form-fits the face. Stac-Vent provides light-tight ventilation. Removable lens holder holds replaceable standard 50 mm round, Federal Specifications, welding filters—shades 3, 4, 5, or 6 available. Glass filters protected inside and outside by acetate cover lenses.

### RIGID FRAME



#### COVER GOGGLE Model 7

Molded curved cover goggles are available in two sizes, medium and large. They fit over most rimless and metal frame glasses. Frames are supplied in a choice of crystal, green or black. Replaceable methacrylate lenses available in clear (C), light green (G2), medium green (G4) and dark green (G6).

### ONE PIECE

Acetate Goggles



#### CHEEPEE Model 99

Low cost one-piece acetate goggle . . . optically perfect, close fitting and lightweight.

#### D-LUX Model 100

One piece, acetate goggle fits over most prescription glasses. Optically perfect with full all around vision . . . no distortion. Both models available in clear and medium green.

### EYE SHIELDS



#### METHASPEC Model 55

Low cost Methaspec Eye Shields are the ideal visitors' protection. The lens and visor are molded in one piece, formed of guaranteed optically perfect .080" thick methacrylate in clear (C) with black painted visor, light green (G-2) and medium green (G-4). Retrax temples and lens angle device permit easy adjustment to fit comfortably.

Quality Eye Protective Equipment

Made by the Leaders in Plastics



**WATCHEMOKET OPTICAL CO., INC.**

232 West Exchange St. PROVIDENCE 3, R. I.

In Canada: Levitt-Safety Limited, Toronto 10, Montreal 26

# SAFETY SPECTACLES

## FOR LIGHT WEIGHT AND COMFORT



### "Featherlight" TUC-AWAY

For 90% Protection Worn All the Time

**Model 415** — plastic retrax temples (illustrated)

**Model 412** — metal retrax temples

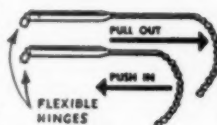
**Model 410** — plastic club temples



#### Shatterproof Methacrylate Lenses

**Replaceable — Interchangeable —** Eye Savers "Tuc-Away" lenses are plano, optically perfect, .080" thick for safe, impact protection; will not shatter or pit. They provide full, clear vision with side shield protection or cup type side and bottom protection. Available in clear, green and gold shades.

**Economical** . . . initial cost is low, maintenance is eliminated, replacement lens cost is low. It pays to have 90% protection 100% of the time instead of 100% protection only 50% of the time.



**Adjustable Retrax Temples** — Plastic or metal Retrax Temples telescope in and out to provide proper head fit. Universal Nose Bridge assures comfort and eliminates need for extra stock sizes. One size fits all.

#### SPECIFY LENS TYPE AND COLOR BY CODE NUMBER

Type Lens	Clear	Light Green	Medium Green	Dark Green	Gold
Regular Side Shield	CSS	G2SS	G4SS		YSS
Full 1" Side Shield	CSSF	G2SSF	G4SSF	G6SSF	YSSF
Quarter-Cup Shield	CQC	G2QC	G4QC		YQC
Semi-Cup Shield	CSC	G2SC	G4SC	G6SC	YSC
Full-Cup Shield	CFC	G2FC	G4FC	G6FC	YFC

#### VISOR-TUC

The Visor-Tuc with over eyes "VISOR" provides almost 100% protection with comfort. Visor fits snugly against the forehead. All lenses are interchangeable in Tuc-Away.



**Model 425**—plastic retrax temples

**Model 422**—metal retrax temples (illustrated)

**Model 420**—plastic club temples

### SPLIT-JOINT



#### FRAME ONLY Model 80

Furnished for prescription use with standard 47 mm P-3 shape lenses. Lenses not furnished.

#### FRAME WITH PLANO Model 80 MS

Safety spectacles with optically perfect, curved, methacrylate lenses, .080" thick, clear (MSC), light green (MSG2), medium green (MSG4).

### SIDE SHIELDS



#### SNAP-ON SHIELDS Model 115

Extra side protection with prescription safety spectacles can be obtained by snapping on these deep cup acetate side shields. Will fit on all sizes of safety frames. Available in clear (AC) or medium green (AG). These eye shields are easy to attach and remove, thanks to nickel silver clip-holders which hold them in place.

### CLIP-ONS



#### TUC-OVER Model 175 Medium Model 176 Large

Featherlight Tuc-Overs are all plastic with integral visor protection. Replaceable, optically perfect lenses are shatterproof, curved methacrylate .080" thick, available in clear (C) light green (G-2) and medium green (G-4). Frames are available in a choice of translucent white or green in medium or large.

### EXECUTIVE



#### SAFETY SPECTACLE

#### Model 595 Metal Retrax Model 590 Club Temple

Handsome, lightweight frame curved to fit forehead and give maximum protection without side shields. Optically perfect, curved methacrylate lenses easily snap-in, snap-out.

SC1—Clear lenses for safety.  
SC2—Light green lenses.  
SG4—Medium green lenses.  
SY1—Gold lenses.

Furnished with protective case.

Quality Eye Protective Equipment

Made by the Leaders in Plastics



**WATCHEMOKET OPTICAL CO., INC.**

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# RESPIRATORY PROTECTION

**AIR CONTAMINANTS** range from relatively harmless "nuisance" substances to toxic dusts, vapors, mists, and gases. Respiratory equipment protects the worker against the inhalation of all of these.

Although removal of contaminants at the source and enclosure of processes help to keep down concentrations of harmful substances in the workroom air, leaks and breakdowns may occur, and there are operations where exposure is brief or infrequent. For such contingencies, personal protection should be provided.

The worker's air intake may be safeguarded by three principal methods:

1. Mechanical filters to remove dusts and mists.
2. Absorption or chemical reaction to remove gases and vapors.
3. Supplied air.

**Types.** Five general types of respiratory equipment are:

1. Canister gas masks.
2. Chemical cartridge respirators.
3. Filter respirators.
4. Supplied air equipment (hose masks and air-line respirators).
5. Self-contained apparatus supplying oxygen or air.

Each type of equipment has a definite field of usefulness, as well as limitations. Manufacturers and dealers want to know the type of exposure when equipment is ordered.



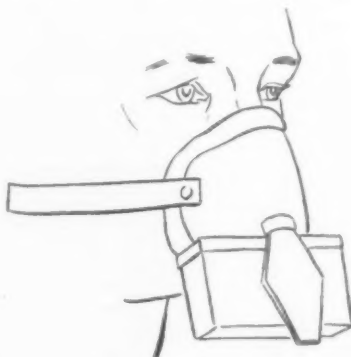
Hose mask for irrespirable atmospheres.

**Approval.** Equipment which meets accepted standards carries the label of the Bureau of Mines. Approval specifies type of exposure as well as design and construction.

## GAS MASKS

A gas mask consists of a face piece connected by a flexible tube to a canister. Inhaled air is drawn through the canister which cleans it chemically. No one chemical yet discovered will remove all contaminants, so the canister must be chosen for the exposure.

The nearest approach to complete protection is the universal mask for protection against combinations of acid gases, organic vapors, ammonia, carbon monoxide, and smokes.



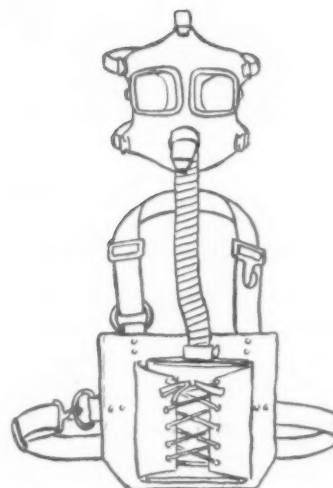
Filter type respirator.

It should be remembered, however, that as the number of gases increase, the service time of the canister decreases.

Canister gas masks with full face piece are for emergency protection in atmospheres immediately dangerous to life. Their effectiveness is limited to concentrations of two per cent by volume, except for ammonia for which the limit is three per cent.

**Characteristics.** Types of gas masks, their identifying colors and uses are:

- A. White—Acid gases, such as hydrogen sulfide, sulfur dioxide, chlorine, hydrocyanic acid.
- B. Black—Organic vapors, such as aniline, benzene, ether, gasoline, carbon tetrachloride, chloropicrin.
- C. Green—Ammonia gas.
- D. Blue—Carbon monoxide.



Canister gas mask.

**AB.** Yellow—Combination acid gas and organic vapor.

**ABC.** Brown—Combination acid gas, organic vapor and ammonia gas.

**N.** Red—Universal—Acid gases, organic vapors, ammonia, carbon monoxide and smokes.

## CARTRIDGE RESPIRATORS

Chemical cartridge respirators usually have a half-mask face connected directly to a small container. Chemicals are similar to those used in gas masks.

Cartridge respirators are used only for non-emergency situations—for atmospheres which are harmful only after prolonged or repeated exposures.

—To page 124

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**DUPOR  
No. 4**

For nuisance  
dusts and fumes.  
Weights only  
4 oz.

**\$2<sup>00</sup>**



**DUPOR  
No. 40**

U.S.B. of M.  
Approved.  
Has 40 sq. in.  
filters for  
Pneumoconiosis  
producing and  
nuisance dusts.

**\$3<sup>00</sup>**



**DUPOR  
No. 46**

U.S.B. of M.  
Approved for  
Pneumoconiosis  
producing and  
Lead dusts.

**\$3<sup>25</sup>**



**DUPOR  
No. 1**

Miniature  
nose mask for  
nuisance dusts  
and fumes.

**\$1<sup>20</sup>**



**DUPOR  
No. 24**

U.S.B. of M.  
Approved.  
Has 24 sq. in.  
filters for  
Pneumoconiosis  
producing and  
nuisance dusts.

**\$3<sup>00</sup>**



**DUPOR  
No. 10**

Chemical  
cartridges.  
For organic and  
inorganic gases.

**\$5<sup>00</sup>**



**DUPOR  
No. 20**

Double sponge,  
for cool,  
water-washed  
breathing.

**\$2<sup>50</sup>**

**Wear a  
Genuine  
DUPOR  
Respirator**

light weight • greater visibility • no blind spots  
face cloth for personal sanitation • panorama view  
controlled breathing • exclusive patented features

**H. S. COVER  
South Bend, Indiana**



**DUPOR  
Automatic**

With  
sponge filter  
for water-cooled  
breathing.

**\$2<sup>25</sup>**



**DUPOR  
Smoke Mask**

Equipped with  
"Nod & Shake"  
fog-proof,  
gas-tight goggles.

**\$5<sup>00</sup>**



**COVER'S  
"Nod & Shake"  
GOGGLES**

Gas-tight,  
fog-proof.  
Wear with any  
respirator.

**\$2<sup>00</sup>**



# Titan

**NEW LEADER IN...**

... Industry's most complete selection of



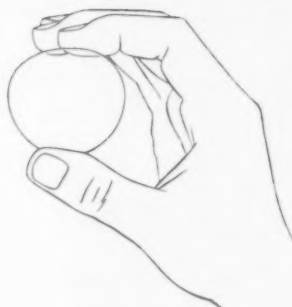
*Latest addition to the B&L protective eyewear family is Titan, new metal-plastic combination type with new S-7 lens shape.*

## safety frames and lenses

Your success in eye accident prevention depends on two factors: 1) the quality of protection you specify, and 2) the co-operation you get from your workers.

Give yourself the benefit of the best that optical science provides! Specify all your protective eyewear from the finest and fullest line available.

Our representative is eager to show you the entire B&L line. Write for your copy of "Complete Eye Protection": Bausch & Lomb Optical Co., 90303 Smith Street, Rochester 2, N. Y.



### Complete range of Bal-SAFE lenses

Clear, Soft-Lite tint, Ray-Ban (3 shades) and G-20. All available ground to individual worker's prescription in single vision and bifocal types. Consult your local eye care specialist.



Y-70 non-sparking acetate-butyrate, ideal for those who occasionally visit semi-hazardous areas. P-3 lens shape.



Z-79 same as above but with added protection of side shields.



M-50 non-corrosive white metal, with Ful-Vue temples, for use in semi-hazardous areas. P-3 lens shape.



H-10 non-corrosive white metal, for general use in semi-hazardous areas. P-3 lens shape.



J-11 same as above but with added protection of side shields.

# RESPIRATORY PROTECTION

—From page 120

## FILTER RESPIRATORS

Protection against any form of particulate matter can be provided by a mechanical filter respirator of proper design. Major items to be considered are resistance to breathing offered by the filter element, adaptation of face piece to faces of various shapes, and fineness of particles to be filtered out.

ASA Code Z-2 requires that the complete respirator show a resistance not in excess of 50 mm. of water to inhalation at a rate of 85 liters of air per minute. Resistance to exhalation under the same conditions may not exceed 25 mm. Commercial respirators are usually held to considerably lower resistances.

Mechanical filter respirators are not effective against solvent vapors, injurious gases, or oxygen deficiency.

Types of mechanical filters approved by the Bureau of Mines are:

1. Pneumoconiosis-producing and nuisance dust respirators, for such dusts as aluminum, cellulose, cement, charcoal, coke, flour, gypsum, iron ore, limestone, and wood.
2. Toxic dust respirators, for protection against toxic dusts that are not significantly more toxic than lead, such as arsenic, cadmium, chromium, lead, manganese, selenium, vanadium, and their compounds.
3. Mist respirators, for protection against pneumoconiosis-producing, chromic acid, and nuisance mists.
4. Fume respirators, for protection against fumes (solid dispersoids or particulate matter) formed by condensation of vapors, such as those from heated metals or other substances.

## SUPPLIED AIR

**Hose masks.** Atmospheres immediately hazardous to life require air supply from a point beyond the contaminated area. With a hose mask, air is normally supplied by a blower. The wearer can inhale through the hose when the blower is not operating.

**Hose lines** (with at least a one-inch connection) are recommended rather than *air lines* with connection to a compressed air system for most operations. In a case of failure of air supply, it is possible to breathe through a considerable length of hose.

Hose masks are not approved with more than 150 feet of hose or where

inhalation resistance exceeds 2.5 inches of water, or the exhalation resistance exceeds one inch of water.

Attachments of additional hose should not exceed the total prescribed length and should be approved for use with that type of mask and should have approved couplings. The blower should be located so that only fresh, clean air is supplied to the face masks.

The hose mask should always be used for work which involves entering tanks or pits where there is a dangerous or unknown concentration of dust, mist, vapor, or gas, or oxygen deficiency.

**Harness** to pull the hose lines requires inspection prior to use. The minimum requirement is that component parts of harness shall withstand a pull of at least 250 pounds.

## AIR-LINE RESPIRATORS

Air-line respirators, connected to compressed air-lines, provide essentially the same protection given by hose masks. They are not intended for atmospheres immediately hazardous to life where the wearer could not escape if failure of the air supply required him to remove the respirator.

This respirator differs from the hose mask mainly in two features: it has a hand-operated, quickly detachable coupling connected to the belt or body harness so that the operator can connect to a compressed air hose, also a flow-limiting device with capacity to permit air flows only between two and 20 cfm.

A trap and filter installed in the



These workers in an opened regulator pit are protected against possible leaking gas by hose masks which receive fresh air as a fellow worker cranks the apparatus. Workers wear harnesses and life lines. Dry chemical extinguishers are kept within reach. (Mine Safety Appliances Co.)

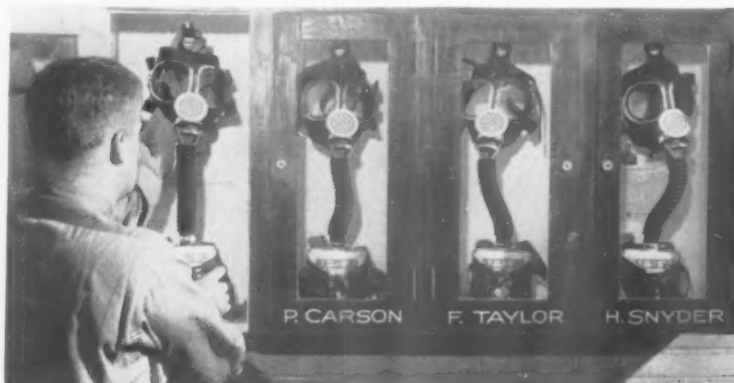
compressed air line ahead of the masks to separate oil, water, scale, or other extraneous matter from the air stream is desirable.

An air-pressure regulator in the line is required if air is supplied at a pressure in excess of 25 psi., also a pressure release valve which will operate if the regulator fails.

Supplied-air respirators are the most desirable for operations requiring continuous use of a respirator at one location. Other types may give adequate protection, but they offer breathing resistance and are consequently more fatiguing.

To obtain clean air, the compressor intake must be kept away from all sources of contamination. The compressor should be well main-

—To page 132



Workers in chlorine plant of West Virginia Pulp and Paper Company, Tyrone, Pa., have individual lockers for their gas masks, ready to use at a moment's notice. Masks are fitted with all-vision face pieces and speaking diaphragms.



# Where does Eye Safety really begin?



## ... with Safety Glasses that are CLEAN!

Safety glasses can't do their job and won't be worn unless you provide a handy way to keep them clean. *Sight Savers*, the genuine silicone treated tissues, are the easiest, most efficient way ever developed . . . the way already known and preferred by millions!

Thousands of Safety Directors have greatly increased the effectiveness of their programs

by installing *Sight Saver Cleaning Stations* at convenient locations throughout their plants. These compact units require very little space, are easy to install, economical to maintain.

Help the people in your plant keep their safety glasses safe. Add *Sight Saver Cleaning Stations* to your safety program now. The cost is so little . . . the job they do is so vital.

MAIL COUPON TODAY  
for Distributor  
Listing

**FREE!**

New *Sight Saver Cleaning Stations* are **FREE** with your purchase of *Sight Saver tissues* . . . so, now you can promote safety, save time and improve workmanship by putting *Sight Savers* at everyone's fingertips, with no extra cost for dispensers!

DOW CORNING  
SILICONES

DOW CORNING CORPORATION, Midland, Mich., Dept. 8003

Please send me your listing of Safety Supply Houses handling *SIGHT SAVER* Cleaning Stations.

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

Zone \_\_\_\_\_

State \_\_\_\_\_

### Sight Saver Cleaning Stations

Cat. No. 67 -- (Black)	} Free with purchase of <i>Sight Saver</i> tissues
Cat. No. 68 -- (White)	
Cat. No. 69 -- (Safety Green)	

Old style *Sight Saver* dispensers still available at \$2.50 each.

Refill packets of *Sight Saver tissues* for all models: Cat. No. 65 ----- \$1.45  
(packet of 800 tissues)



## COMPARE ITS BIG SIZE

The white space on this page is exactly the size of the Magic sheet; over 50% larger than usual, and twice the tearing strength. Yet it costs less. Loaded with sparkle-power, it polishes—and protects—as it cleans crystal-clear.

Compact Self-Mounting Dispenser has no moving parts. No drilling. No screws. Just stick it to the wall.

Magic Heavy-Duty Cleaning Station is for heavy grit areas or where anti-fog protection is needed. Magic Lens Cleaning & Anti-Fogging Fluid is pressure-packed. 1,400 applications per can. One Magic can equals 4 old-fashioned bottles. That's the first saving. No pump. Nothing to refill.

Indestructible Dispenser locks can in place. No pilferage possible. Releases each sheet of paper 1-by-1, not in bunches; greatly reducing waste.

Magic Heavy-Duty Paper, not silicone treated, is our superb wet-strength tissue. No scratching on plastic, and no lint. Again, you save money.

Ask to exchange Magic for your old cleaning stations **FREE**, or order anew—now! Wire or write us or your Safety Jobber today!

Magic Lens Tissue 6 refills per carton	\$8.40 per carton
Magic Lens Tissue Dispenser	\$2.50 each
Magic Heavy-Duty Dispenser	\$5.95 each
Cleaning & Anti-Fogging Fluid Twelve 12 oz. cans	\$12.50 per carton
Heavy-Duty Paper 18 giant refills (760 sheets ea.)	\$11.60 per carton
All prices F.O.B. shipping point	

## Exchange all your other Stations for Magic FREE



Magic Lens Tissue  
America's leading  
Eye-aid for  
Safety.

Magic Heavy-Duty  
Cleaning Station  
Science's answer to  
Grit, Fog, and Grime.



The Silicone Paper Company of America Inc. 75 E. 45th St., New York 17, N. Y.

# PROTECTION FOR THE HEAD

**HEAD INJURIES** caused by falling objects are a serious hazard in many industries and the hard hat, first introduced in mines some 35 years ago, and constantly improved since then, has an impressive record of lives saved. Head protection has become common practice in other industries, including construction, logging, shipbuilding, and many types of maintenance work.

Head protection is also becoming general among public utility companies where linemen wear protective hats for protection against live wires overhead as well as against impact.

Protective hats are also useful where there is danger of bumping the head against overhead structures.

**Requirements.** A protective hat should have these qualities:

1. Resistance against impact.
2. Resistance to fire.
3. Resistance to moisture.
4. Light weight.
5. Insulation against electricity around live equipment.

**Types.** The most common type has a brim all the way around, protecting the head, face and back of the neck.

The cap type is sometimes preferred where a brim might be in the way.

Some models have brackets to support miners' cap lamps or welding masks.

## Construction

Most widely used materials are laminated plastic, glass fiber, and aluminum alloy.

Laminated plastic molded under high pressure provides a hat that is resistant to impact and to effects of water and oil. It provides effective insulation against electricity.

Glass fiber impregnated with resin has a high-strength-weight ratio, high dielectric strength and resistance to moisture, caustics, and acids.

Aluminum alloy is light in weight and meets all requirements for resistance to impact and moisture, but it is a good conductor of electricity. Metal hats do not meet specifications for all industries and should not be worn where there is danger of electrical contact.

Hats which glow in the dark, due to a phosphorescent pigment, are

obtainable in some types on special order.

The hard shell of the hat is supported by a cradle or hammock which keeps the shell away from the hat, cushions it against blows, and permits circulation of air around the head.

Cradle and sweatband should be replaceable because of deterioration through exposure to perspiration. This is important for sanitary reasons, since hats may be worn by more than one person. The shell can be sterilized by any of the common methods.

For cold weather a lining of water-resistant cloth may be attached to the hat to protect head, neck and ears.

On locations exposed to strong winds, such as bridges and oil derricks, a chin strap is useful.

An eyeshield of transparent plastic may be attached to some types of hats. It is hinged under the peak

and lies flat against the peak when not in use.

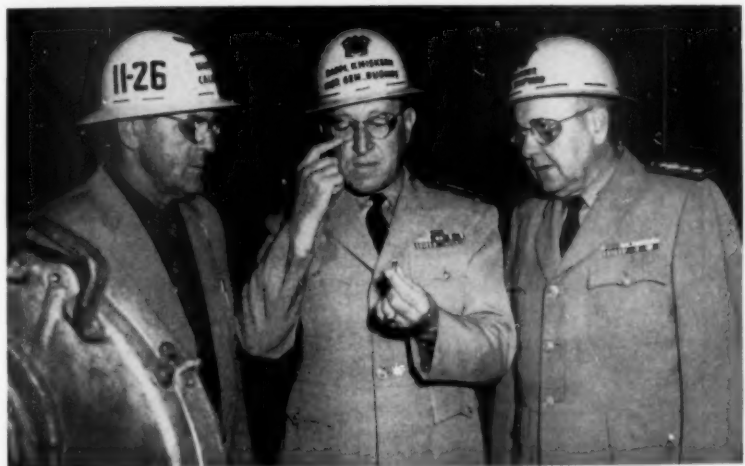
**Weight.** Not more than 14½ ounces for the complete hat is specified by Federal Specification No. 367A (U.S. Treasury Department, Procurement Division). The specification also lists several tests which hats must pass. These include moisture, impact and electricity.

**Work caps.** Where protection against impact is not required, light cloth caps are worn to protect the hair against paint splashes, dust, oil and other non-corrosive substances.

Disposable work caps of heavy Kraft paper treated with neoprene, and a flame retardant are available. The material is water-repellent and resistant to acids and alkalis. Cost is about 30 per cent less than most cloth caps.

**Colors.** Hats are now available in seven standard colors—white, gray, red, green, blue, brown and black. Other colors are available on special order. Color is permanent because it goes all the way through the material.

## Goggles Save an Admiral's Eye



SHOWN HOLDING the piece of metal which struck his safety goggles during an inspection tour of the Puget Sound Naval Shipyard is Rear Admiral L. A. Kniskern, inspector general of the Bureau of Ships.

The incident occurred when the admiral's party paused to watch a driller cut slots in a piece of tubular aluminum. While the saw was ripping at the pipe, a piece of metal bypassed the saw guard and struck Admiral Kniskern's goggles directly over his right eye.

"I've always been a strong advocate of our safety programs," commented the Admiral. "Wouldn't you say that I can now speak with greater authority when it comes to urging all hands to wear goggles and other protective equipment when engaged in dangerous jobs or in hazardous areas?"

Witnesses to the incident were D. T. Calhoun, master shipfitter (left), and Rear Admiral W. A. Dolan, shipyard commander.

# Scott Air-Paks

## Cut Repair and Maintenance Costs, Safely!

*Right — Old Method.*  
Blowing air into chemical storage tank for 24 hours before man can safely enter.



*Below — No Waiting.*  
No Down Time with Scott Air-Pak protection. Man enters and does the job immediately, safely.

# SAVED 24 HOURS

on every  
Tank Cleaning Job

- Many times an old established practice is accepted as "The way it has always been done". No attempt is made to change it. Blowing air into a chemical storage tank from 12 to 24 hours before permitting a man to enter to clean or paint it, is a typical example! It's a slow and costly method. How much simpler and lower in cost to equip a man with a Scott Air-Pak—open the tank and let him go to work immediately — Safely and Quickly!

*On  
Hazardous Jobs  
Scott Air-Paks  
Help Management  
and Labor  
Breathe Easier*

Does tank cleaning and painting play a part in your process? Let us tell you more about the Scott Air-Pak Way.

Write for free booklet "Scott Air-Paks Save Money, Man Hours and Men for Industry!"

### VISION UNLIMITED

New Scottoramic Face Mask now available for all Scott equipment, (standard on most models), and for replacement on your present breathing apparatus.



SAFETY EQUIPMENT DIVISION

## SCOTT AVIATION CORP.

211 ERIE STREET

LANCASTER, N. Y.

Canada: Safety Supply Co., Toronto — Branches in principal cities  
Export: Southern Oxygen Co., 15 West 57th Street, New York 19, N. Y.



Special colors are sometimes ordered, or stock hats painted, to match the color used by the company on vehicles, in advertising, etc.

Distinctive colors and designs are also used to designate the wearer's department or trade. This is often done in plants where certain areas are restricted to authorized employees.

No standards have yet been compiled for the use of color for identification of the wearer. Many civil defense groups have established codes and some industries have adopted similar plans. Typical of these is the code developed by the Higgins Company, New Orleans:

Red—Pipe workers  
Blue—Fitters  
Green—Welders  
Buff—Rigging  
Yellow—Electrical  
Black—Labor  
Gray—Burning  
Brown—Carpenters  
Brown bottom, white top—Painters  
Red bottom, blue top—Machinists  
Gray bottom, white top—Shear and Blacksmith shops  
Lavender—Expeditors  
Aluminum—General foremen  
Brown bottom, yellow top—Caulkers and sanders

A black line on a helmet denotes a foreman and a red line a leader-man. Badge numbers are also stencilled on the front of each helmet.

Wearing protective hats is included in many union contracts and the unions have helped in educating their members on the need for head protection.



Safety belts and life lines are worn on jobs above ground, and in pits or tanks where there is possibility of a slide of material or an irrespirable atmosphere.





Workmen below line poles or in underground vaults wear protective headgear to avoid injury from falling objects and electric shock. These linemen are also wearing rubber sleeves and gloves as they set up a pole near an energized circuit.

#### Headwear for Women

Women are seldom employed in peace time occupations where protective hats are required. Their hair, however, provides a problem around moving machinery. Much effort has been expended in designing headwear that provides adequate protection and is reasonably attractive in appearance.

Scalping is likely to occur at points where hair may come in contact with rotating parts, or where enough static is produced by the machine to lift the hair.

Enclosing the machine may be practicable in some operations but women who work around machinery should wear caps which cover the hair completely. Hair covering is generally desirable from the standpoint of cleanliness.

Hair covering should be made of fabric sufficiently durable to withstand repeated laundering. Design should be simple so that pressing may be done by machine.

Flame-retardant material should be used if worn near spark or flame.

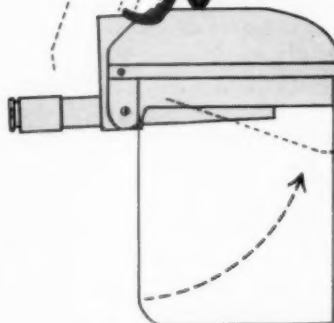
Caps with peaks provide warning before the head comes in contact with a moving object. They should be provided in a sufficient variety of head sizes or with a sufficient range of adjustment to fit all persons.

Hair nets or turbans, preferred by many women, are not considered sufficient protection around moving machinery. Sometimes their use is a compromise with feminine taste.



## UNUSUAL SHIELD DESIGN MEANS

# Surer Protection



StaSafe's Fixed Position Headgear gives the wearer a choice of only two face shield positions . . . all the way up or all the way down. The front cannot be locked at an intermediate position giving only partial protection.

With the commonly used "standard friction joint", the worker may set his face shield front at any angle he chooses. Frequently he loses the protection entirely by pushing the front too far from his face.

With the Fixed Position Shield, workers in your plant receive full face protection. It eliminates guesswork . . . they always know what the best front angle is because it's the only angle at which the shield locks.

Write today for full information on FIXED POSITION HEADGEAR, (Shield No. 25). Ask for bulletin FS-1.



#### . . . and a word about replacement fronts

StaSafe fronts are made of optical quality, cellulose acetate specially selected for this purpose. The StaSafe trademark you see on each front is your assurance of top quality. Insist on StaSafe . . . don't settle for less.

**STANDARD SAFETY EQUIPMENT COMPANY**  
**232 WEST ONTARIO STREET CHICAGO 10, ILLINOIS**  
 NEWARK 4, N. J. CLEVELAND 10, OHIO LOS ANGELES 66, CAL.  
 577 BROADWAY 855 EAST 152nd ST. 12921 W. WASHINGTON BLVD.

## EYE CONSERVATION

—From page 116

sun glare. The better glasses conform to optical standards but many of the cheaper ones show considerable distortion.

**Welding helmets** provide protection for the eyes and face under the severe conditions of arc welding. They are attached to headgear so they can be raised for placing the work. Impact goggles worn under the helmet provide protection when the helmet is raised.

Helmets are made of dielectric fiber resistant to sparks, molten metal and flying particles, and having low heat conductivity. Replaceable cover glass protects filter plate.

Some helmets have a lift-front glass holder which permits rapid inspection of work without removing helmet.

**Welding hand shields** are used on operations where a helmet is not practical, and on tack welding, set-up work, inspection and time study work. Construction is similar to welding helmets.

**Filter Lenses.** The following shade numbers are listed in National Bureau of Standards Handbook H24:

No. 3—For protection against glare or reflected light, spot welding operations, light brazing.

No. 4 or No. 5—Light acetylene cutting and burning.

No. 6—General acetylene welding, or welder's helper or set up on arc welding.

No. 8—Heavy acetylene welding or cutting, or very light arc welding.

No. 10—Arc welding up to 250 amperes.

No. 12—Arc welding of more than 250 amperes, atomic hydrogen welding.

No. 14—Carbon arc welding.

Goggles are available in shades up to No. 8; higher numbers in helmets.

Heat-treated cover lenses can be provided to protect filter lenses against pitting and scratching. Heat-treated filter lenses are also available.

### ADMINISTERING THE PROGRAM

**Supply and distribution.** In some companies the supply is kept in the main supply department. In larger plants a supply of goggles and repair parts may be kept in each shop.

Some operate goggle carts with trained attendants who make the rounds, cleaning, adjusting, repairing and replacing goggles on the job.

**Fitting.** Prescription glasses should be fitted by a refractionist. Fitting plano goggles also requires training and experience. Many optical companies offer instruction in this work. Unless goggles are fitted properly there will be opposition to eye protection.

**Cleaning and sterilizing.** Both goggles and spectacles become smudged and facilities for cleaning them on the job are desirable. Con-

venient cleaning stations encourage frequent cleaning. These may dispense silicone-treated tissues or cleaning liquid and soft tissues. The latter should be used for plastic lenses.

### WISE BIRDS, INDEED, ARE THESE OWLS

Thanks in part to the Wise Owl Club of America, blindness in the nation's estimated 300,000 eye accidents annually is confined to about 1,100 cases.

The Wise Owl Club, composed of persons whose sight, in one or both eyes, has been saved by safety glasses, was started in 1947 at the St. Louis plant of the American Car and Foundry Company. It is now sponsored by the National Society for the Prevention of Blindness which encourages the organization of local chapters in industrial plants, vocational schools, and other shops.

Any company can set up its own chapter of the Wise Owl Club by applying to the Society at 1790 Broadway, New York 19.

### What is "Good Vision"?



One of the three available devices for making visual surveys. Information thus obtained shows individual's fitness for various jobs and reveals those needing refractionist's services. The device can be used by trained laymen. (Caterpillar Tractor Co.)

**Near acuity.** Ability to focus and see well with both eyes separately at a distance of 15 inches. This is the distance at which most machine and office work is done.

**Distance acuity.** Ability to focus eyes for a distance of 20 feet or more. This is necessary for crane operators, jeep and truck drivers, railroading, for example.

**Adequate field of vision.** Ability to see to both sides, and up and down, while focusing on a small target.

**Depth perception.** Ability to judge space relationship. This is important for accuracy in almost any job.

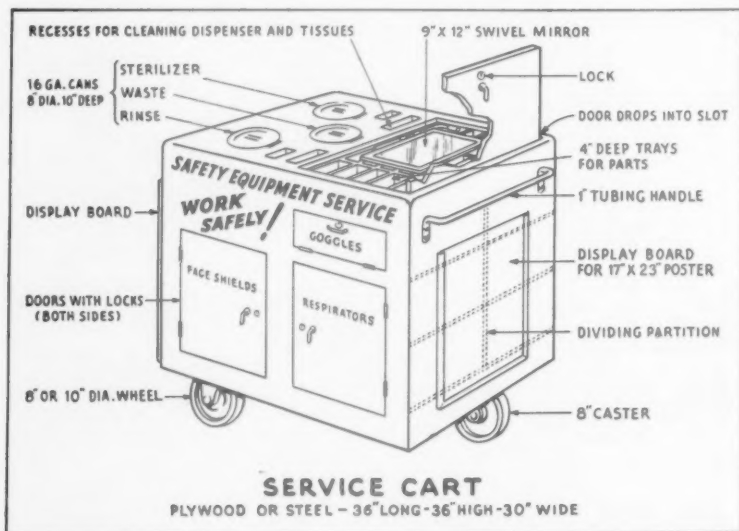


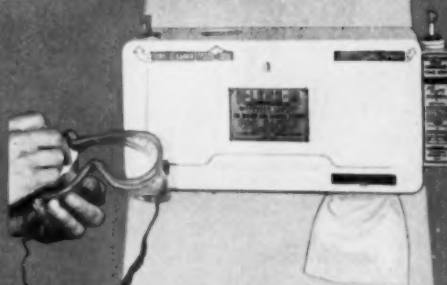
Diagram of mobile service cart equipped for cleaning, sterilizing and adjusting goggles, face shields and respirators. The cart tours the plant, servicing equipment on the job.

**WISE TO CHOOSE  
SAFE TO USE**

**WISE TO CHOOSE  
SAFE TO USE**

**THOSE IN THE KNOW**

**... PREFER**



Install K-LENS-M Lens Clean-  
ing and Anti-Fogging Stations  
for clean, clear vision . . . for  
all types of safety eyewear,  
glass or plastic.  
More Efficient—Lower Cost  
Send company letterhead for  
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**K-LENS-M**  
REG. U.S. PAT. OFF.

The Acknowledged Leader in the Lens Cleaning Field

The **WILKINS** Co., Inc.

Cortland 1, N. Y.

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See demonstration of Wilkins Products, Booth No. 57, Greater New York Safety Council Show

## RESPIRATORY PROTECTION

—From page 124

tained. It must not run too hot, as dangerous amounts of carbon monoxide can be produced by decomposition of lubricating oil.

**Air-supplied suits.** Sometimes rescue or emergency repair work must be done in atmospheres extremely corrosive to the skin and mucous membranes, in addition to being acutely poisonous. For these conditions, complete suits of impervious material with breathing equipment are available.

If a hose line is used, it should be connected to the suit itself as well as to the helmet. It is fatiguing and dangerous to wear such a suit for a long period unless it is well ventilated.

### ABRASIVE BLASTING

Abrasive blasting requires not only an adequate supply of filtered air, but also mechanical protection for the head and neck—either an impregnated cloth hood or a helmet of some rigid material. It should be covered both inside and outside with a plastic material, such as soft rubber, to increase both comfort of wearer and resistance to abrasive.

A window of transparent material, suitable for optical use, protected from the abrasive by a 30- to 40-mesh fine wire screen should be provided. Both window and protective screen should be readily replaceable.



A ventilated welding helmet, plus goggles, protect this welder on the job. Clean fresh air is fed into the helmet through a supply tube encircling the lens holder. (Chicago Eye Shield Co.)

### SELF-CONTAINED APPARATUS

For work in atmospheres immediately hazardous to life at distances more than 150 feet from the source of fresh air, self-contained oxygen-breathing apparatus should be used.

The two principal types of self-contained apparatus are: (1) Com-



Abrasive blasting suit.

pressed air or compressed oxygen type; (2) Internal generation type which produces oxygen by reaction of chemicals in the canister with the moisture in exhaled breath.

### CARE OF EQUIPMENT

A central station for care and maintenance of respiratory equipment is desirable where many respirators are in use. Such a unit can also handle distribution and maintenance of other items of personal protective equipment.

Each employee should be provided with two respirators and either a locker or a hook at the central station. Respirators should be branded or tagged with a number to indicate the employee to whom it is assigned.

**Cleaning and disinfecting.** All parts, except canisters and cartridges, should be cleaned after use. Face pieces, air lines and hose may be washed with soap and water, rinsed in clear water, and dried.

All respiratory devices should be disinfected before being passed from employee to employee. Methods of disinfection include:

1. Immersion in solution of quaternary ammonium salt detergent. This

material is not injurious to skin or to rubber.

2. Subjection to a moist atmosphere of antiseptic gas, such as formaldehyde, for 10 minutes.

3. Immersion for 10 minutes in a solution of formalin made by dissolving 1 part of 40 per cent formaldehyde in 9 parts of water.

Parts should be rinsed thoroughly after sterilizing to remove traces of disinfectant, then dried.

Elastic head bands may be damaged by sterilizing but they should be washed with soap and water. Bands should be replaced when the respirator is transferred to another employee.

The respirator should be turned in to the central station at the end of each shift to be cleaned and sterilized, and repaired if necessary.

Where the maintenance crew works several shifts, one respirator per employee may be sufficient. Usually, however, it is necessary to have one complete unit in the process of cleaning while the other is being worn.

Filters should be replaced when clogged, and the used ones discarded. Canisters should be replaced at regular intervals as recommended by the Bureau of Mines. Even when not in use they lose their effectiveness with time.

### Who Pays for Personal Equipment?

Whether management or the employees should assume the cost of personal protective equipment is not always easy to decide and company policies vary rather widely. Factors are hazards of the job and possible severity of injuries, willingness of workers to wear equipment, its length of life, and degree to which it may be depreciated by non-occupational use.

**Goggles.** Most companies issue plano goggles without charge, sometimes requiring a deposit. Other companies share the cost.

Where prescription goggles are required, employers often assume part of the cost or make the goggles available at below retail prices. According to a recent survey, only 27 per cent of the companies supplying prescription goggles issue them without charge.

**Safety Shoes.** Many of the larger companies maintain shoe stores for the convenience of employees and make shoes available at or below cost. Others which do not wish to handle shoes make arrangements



IMPROVED—  
#30 Sand Blast Hood



NEW—  
Aircool,  
perforated  
foam rubber  
Sweat Band



NEW—  
Vivid View,  
Wide Scope  
Safety Goggles



NEW—  
C-256 Single Cartridge  
Chemical Respirator  
—U.S.B.M. Approved



PULMOSAN  
STOPS  
*Accidents*



NEW—  
Stops-Fog—  
low cost  
disposable goggle  
anti-fogging and  
cleaning station

## 5 VITAL CONTRIBUTIONS TO SAFETY BY PULMOSAN

That's our record for the business year just past . . . an indication of the practical, yet exciting product development being pursued by our research, design and engineering departments. From Pulmosan you can always expect new and improved products that reflect the demands of the American Industrial Plant. Write for complete information about these five important products and for our catalogs offering hundreds of items of safety equipment.

**Pulmosan**

SAFETY EQUIPMENT CORP.

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with local stores to serve employees. Under both plans companies make it possible for shoes to be purchased on a payroll deduction plan. Few companies issue safety toe shoes free.

**Work Gloves.** These are often purchased by the users since they may be used either on or off the job. Where the requirements of the job are exacting, from the standpoint of either cleanliness or protection against severe exposure, gloves may be turned in for laundering, repair or replacement. In general, the policy is that an employee will take better care of equipment for which he pays at least part of the cost.

Special items of protective clothing which would not ordinarily be used off the job are usually issued to employees without charge. Examples are welding equipment and garments used in toxic or corrosive atmospheres.

### Training in Use of Respiratory Equipment

Respiratory equipment is often used under conditions of strain and excitement. Those who will have to use it should therefore be trained thoroughly. Regular inspection is also necessary to avoid deterioration of equipment which is not used regularly.

#### Training

1. Train each person in putting mask on and adjusting it rapidly to his face.

2. Have each person wear it long enough to become accustomed to the breathing resistance and to putting it on and taking it off.

3. Repeat training at regular intervals.

#### Maintenance

1. Set up a card for each mask to indicate date of latest inspection and replacement of canister and amount of use, if any, which canister has had.

2. Replace canisters at least annually, even if not used.

3. When a canister is replaced, examine facepiece, harness, hose, and headbands for leaks or deterioration. Replace defective parts.

4. Canisters are ordinarily supplied with seals to keep out air while in storage. Remove seals when canister is placed in service.

5. Store mask in a place accessible to hazardous area, and as cool and dry as possible.

6. If mask is for emergency use only, canister should be replaced after use.

# DISASTER CONTROL

## A Problem for Plant and Community

**HOSTILE AIRCRAFT** may never drop bombs on this continent but the time, effort and money spent on preparedness measures are not being wasted. In recent years, floods, hurricanes, fires, and explosions have brought death and devastation to many sections of the country.

In many such catastrophes, industrial organizations have rendered notable service. Wherever disaster strikes, industry's employees and equipment will be found on the job, rendering first aid to the casualties, conducting rescue and salvage work, fighting fire, and building dikes to hold back floods. And the psychological effect of trained men on the job is not the least of the benefits.

Management is responsible for organization for disaster control in its plants but a plant is not something apart from the community. Its program should be coordinated with those of other groups and the local Civil Defense organization is the logical medium.

Employees are on the fire line whenever there is an emergency and they should be represented on all committees concerned with disaster plans. Key men may be sent to regional Civil Defense courses.

A detailed national plan has been outlined in the Federal Civil Defense Administration publication, *Civil Defense in Industry and Institutions*. Following are steps to be taken:

### 1. Choose the coordinator.

In every plant there is an individual with executive ability, who has the confidence of both management and employees, who can take complete charge of the situation.

For specialized information and guidance he can call upon outside consultants, such as representatives of casualty and fire insurance underwriters.

### 2. Make a survey of plant buildings and shelter requirements.

A manual issued by the FCDA, *Methods for Determining Shelter Needs and Shelter Areas*, tells what to look for and what to avoid:

1. Any area selected as potential shelter should be in the center of the building, away from outside exposure. "Outside" includes courts and light shafts.

2. Areas should be in a part of the building that is structurally compact, with close spacing of columns and short-span beams.

3. They should be out of direct line with doors, windows and hallways exposed to the outside.

4. Walls and doors surrounding the area should be free of glass.

5. There should be at least one interior stairway, not adjoining an outer wall.

6. Areas should contain no furnaces or boilers, and no large steam, water or gas pipes.



As part of a plant-wide program of Civil Defense preparedness, the San Diego Division of Consolidated Vultee Aircraft Corp. has built and installed several of these mobile first-aid stations. The units are kept outfitted and ready for emergencies. Here a civil defense drill is being held.

# *Dockson* HELMETS

**COMFORTABLE**

**STURDILY BUILT**

**EASILY ADJUSTABLE**

**DESIGNED FOR SAFETY**

**ONE PIECE CONSTRUCTION**

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Quality built, light, rugged, fully adjustable. Fitted with Federal specification plates of your choice.

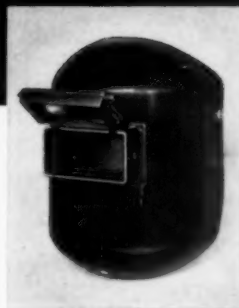
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7. The ceiling should not be of the hung or suspended type, or have heavy lighting fixtures or plaster ornaments.

8. The area should be as free as possible of furniture, stored merchandise or equipment of any kind.

9. There should be no safes, banks of filing cabinets or heavy machinery on the floor above.

Not many areas meet all these requirements so it may be necessary to pick the best space available. Hallways, corridors, fire stairs, rest rooms and elevator lobbies in the center of buildings are good locations, if free of glass.

### 3. Select, train and assign emergency protection personnel.

These include wardens, police, firemen, engineering and rescue workers, medical and welfare workers. Local civil defense organizations have conducted many such training courses.

### 4. Make a floor plan.

Show branch control rooms, first-aid stations or cabinets, fire extinguishers and other equipment, elevators, stairs, emergency lights and exits, and a general traffic plan within the plant.

### 5. Post directional and information signs.

Include evacuation instructions, in offices and other places of assembly.

### 6. Provide emergency supplies in shelter areas.

First-aid kits, water supplies, and emergency lighting are among the essential items. All persons assigned to civil defense tasks should be provided with civilian defense identification, such as arm bands.

Exit drills should be held frequently and include all employees. The first few drills should be announced in advance. When routine procedures have been established, drills should come at irregular intervals without warning. These drills will uncover weakness in planning, coordination and communication.

In general, the functions of the plant protective services are:

1. To direct workers to safety.
2. To rescue trapped persons.
3. To render first aid.
4. Repair damaged water mains and utility lines.
5. Fight fires.
6. Maintain morale.
7. Prevent panic.
8. Maintain order and discipline.
9. Demolish unsafe structures.
10. Remove debris.
11. Perform necessary welfare duties.
12. Effect emergency restoration of plant so production may be resumed.

The head of each protective service in the plant is responsible for training workers in his organization. In planning a training schedule he should cooperate with municipal departments and with the local civil defense organization.

Because of the devastating effects of an atomic attack, it is advisable for an individual trained in one service to receive training in other services as well. A rescue worker for example, might be able to put training in fire fighting to good use.

Teams of each protective service

should be trained with teams of other services to assure coordination of activities. Training should be as realistic as possible. It should reproduce conditions likely to arise before, during and after an emergency.

The protective services should also engage in combined training exercises with the local civil defense organization. The plant's protection organization must be well integrated with that of the surrounding area to function at peak efficiency in an emergency.

## HANDLING COMPRESSED GAS CYLINDERS

A COMPRESSED gas cylinder can become a jet rocket and tear through brick walls if the cylinder is hit or the valve is broken off. All cylinders should be tightly secured.

Oxygen is usually furnished commercially in steel cylinders under about 2,000 pounds pressure at 70 F. Pure oxygen will not burn by itself but it will cause grease or oil in a gauge, gauge line or pipe line to explode.

Acetylene should never be generated inside a building, nor should it be generated, distributed or used in pressure greater than 15 psi. At greater pressures it may become unstable and explode.

Calcium carbide in large amounts is dangerous if not kept dry.

Acetylene cylinders contain 300 cu. ft. of acetylene dissolved in acetone. However, acetylene cylinders are filled with porous material necessary for safe and stable storage of the dissolved acetylene.

All compressed gas cylinders must be secured either in transit or in place. The cylinder should bear the ICC stamp and a date no older than 5 years. It should be examined for leaks.

Most cylinders have fusible safety plugs in the valve. Many of these melt at about the boiling point of water. If the valves become clogged with snow and ice, they should be thawed with warm (not boiling) water applied only to the valve. Never use a flame to thaw the valve.

All liquefied fuel gas cylinders should be stored and used with the valve end up so the gas, and not the liquid, comes out. Acetylene cylinder valves must not be opened more than 1½ turns.

Direct flames, sparks, molten metal, excessive heat or electric arcs

should never be allowed to contact a compressed gas cylinder.

Flammable gases should be protected from long exposures to hot sun in the summer.

Threads on a regulator should correspond with those on the cylinder valve. Do not force connections that do not fit. Use regulators and pressure gauges only with gases for which they are designed.

Never attempt to repair or alter cylinders, valves, regulators or attachments. This work must be done by the manufacturer.

Test all connections and valves with soapy water before using.

Open cylinder valves slowly.

If there is no valve wheel, the approved wrench or key must be on the valve while the cylinder is in use.

A regulator valve to reduce pressure must always be used.

Before connecting a regulator, crack the cylinder valve slightly to clean the opening of dirt or dust. Be sure to stand aside. Never "crack" hydrogen valves—the chance of ignition is too great.

After the regulator is attached, stand aside and open the valve slowly; a sudden surge of pressure may damage or blow out the gauge.

Keep oxygen cylinders, gauges and fittings away from oil and grease. Do not handle them with oily hands, gloves or clothing.

Never use oxygen as a substitute for compressed air—in breathing apparatus, compressed air tools, in burners or engines. In shipbuilding, welders have been burned to death when they used compressed oxygen instead of compressed air for ventilation in a hold.

Never fill cylinders or attempt to mix gases in a compressed gas cylinder.





Fiber glass Safety Hats, in grey, white, yellow, orange, green, blue and brown. Extruded plastic headbands



Safety Hat readied for cold weather. 'Winterizers' also fit headrests of Helmets, Goggles, Face Shields



\* Chin Strap holds this Safety Cap. Cap has visor in front only, with narrow brim in back and at sides

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\* Fiber glass Welding Helmet, plastic lens holder, with a choice of headrests, or as a Handshield



\* All-Nylon Adjust-O-Lok headgear with Nylon pivots and winged knobs is insulative and long wearing



\* Lift-Front Helmet, shown pivoted to sides of Safety Cap. 'Quick-Detach' brackets permit instant removal

## JACKSON QUALITY SAFETY EQUIPMENT



Series 50 Gas Welding and Grinding Goggles are well ventilated. Welding Goggles show elastic headband

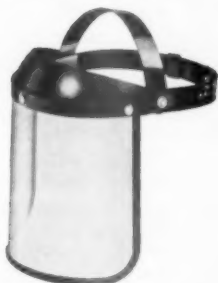


Series 60 Unigoggle for Gas Welding has large inside area. Shown here with extruded plastic headgear



\* Series 70 Supergoggles, shown pivoted to Safety Cap. They're wider, to fit over widest spectacles

## • MANY NEW ITEMS ADDED THIS YEAR •



Featherlight Eye and Face Shield pivots on plastic headrest. Visors, in many sizes, clear or green



\* Face Shield fits Safety Hat, pivots on aluminum frame. Easy to remove. Heavy Plastacele visor

**new**

\* These items are new, were all introduced in 1955. For complete information contact your Jackson Dealer or write to us

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der or use it for any purpose other than those for which it was intended.

Manifolds should be designed and obtained from a listed manufacturer and installed under their supervision.

Only recognized standard regulators should be used.

Regulators are instruments and require care in use and handling. They are worthless if they are not working right.

If a regulator creeps or builds up pressure on the low pressure gauge when the torch is closed, the cylinder valve should be closed and the regulator removed for repairs. If the gauge is not registering pressure properly it should be removed.

All repairs must be done by the manufacturer. The regulator should be tagged and returned to the store-room.

**Hoses** for different gases should be different colors with couplings stamped for identification to prevent interchange of connections.

Usually welding and cutting hose connections are marked STD-OXY for the green oxygen hose and STD-ACET for acetylene red hose.

Prevent sparks or slag or flame from hitting hose. Protect hose from being kinked, run over or caught in a door.

If a flashback occurs and burns in the hose, even briefly, cut off and discard burned hose. Cut off leaking sections of hose; never repair by taping.

Test for leaks by placing hose under water under normal working pressure or turn off torch under normal pressure and watch low pressure gauge at least two minutes for drop in pressure.

A single hose with more than one gas passage must not be used as wall failure would allow the gases to mix in the hoses.

**Explosive limits.** Acetylene: from 2.5 to 80 per cent by volume in air.

Hydrogen: 4 to 84 per cent.

Acetone: 2.5 to 12.8 per cent; flash point, 0 F.

Alcohol: Flash point, 48 F. Safer than acetone but ethyl alcohol is highly toxic.

Ether: 1.8 to 36 per cent explosive limits; flash point —49 F.

Gasoline: 1 to 6 per cent explosive limit; flash point —50 F.

## Ionizing Radiations

—From page 7

equipment is necessary. Monitoring and periodic decontamination of all locations and operations are also required. At activities above 500 millicuries, permanent shielding and remote control handling apparatus permanently installed are required, with continuous monitoring of all operations.

Any radio chemical laboratory operating in the millicurie or higher levels should be constructed and equipped with a view to easy decontamination and to relatively easy isolation of the processes involving high activities and high rates of exposure.

## RADIOACTIVE WASTES

One of the vital problems in handling materials producing ionizing radiations is the disposal of radioactive waste materials. One cannot assume that such materials will be sufficiently diluted if they are simply emptied down the drain. Under some circumstances burying of waste products may also be highly hazardous. This would be especially dangerous if they were buried in a place where the materials could pollute underground waters leading to a public water supply.

The best solutions up to now appear to be to dilute solid or liquid wastes with sufficient volumes of non-radioactive isotopes of the same element to reduce the activity below hazardous levels or to concentrate the wastes to a small enough volume that they can be buried in containers, usually concrete blocks, which will erode away very slowly and thus release their activity to surrounding waters at a very low rate.

Many of the radioactive waste products may be gasses or vapors emitted to the air. These, if above safe levels, should be filtered or absorbed from the waste air stream and their disposal should be considered as carefully as the disposal of any other radioactive waste material.

For companies getting radioactive materials from the Atomic Energy Commission advice and instruction are available from the Commission. If the radioactive material comes from sources not under the control of the Commission, advantage should be taken of the same courses of instruction and advice which are available from several of the large university research centers.

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**20% Larger**

No. 548-C



Wear them over all modern glasses. Wide surface contoured edges eliminate nose pressure, seal out flying particles. Change the 50 mm Super-Safety lenses from front, quickly. Well-ventilated to reduce fogging. Comfort-King headband is easy to adjust; can't snag hair; won't kink or curl; requires 30% less tension.

See your CESCO distributor about the 548-C and many other CESCO safety goggles and glasses. There are types for every job.

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 men like to wear...with  
 incomparable comfort...



# SuperGard

## SAFETY HATS and CAPS

- Made with FIBERGLAS and toughest thermosetting Polyester resin
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- Lightest weight for easy wearing
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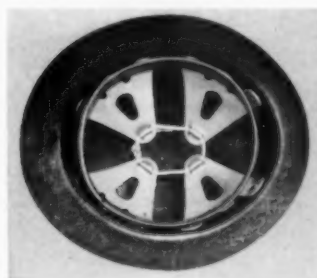
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Write for Bulletin No. 45



### SuperGard GIVES FULL PROTECTION

Shells for SuperGard Hats and Caps are made of Fiberglas-reinforced, superior polyester resin. They are strong, light in weight, and are impervious to moisture. They meet Federal specification tests for impact, penetration, electrical resistance, flammability and water absorption... and are fully resilient for life of the SuperGard. Tough, handsome, durable and—most important—*extremely comfortable*, SuperGards are the kind of safety equipment men *enjoy* wearing. Check ALL their features for good reasons.



### REAL WEARING COMFORT.

Suspension is form-fitting resilient material that shapes to wearer's head... quickly and ideally comfortable. Easily adjusts for depth... for "air conditioned" separation from shell. Easily removed and replaced. No metal parts!

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# The Worker's Armor

By CARTER KENDALL

**THERE IS NOTHING NEW** about body protection. It has been used for thousands of years, starting with the cave men. If we can believe the artists' drawings of these men, they draped the skins of animals around their torsos to ward off the elements.

We can easily imagine that one of the stone-headed-spear-throwing gentry discovered that the toughened hide provided some degree of protection against sharp objects, either accidentally encountered or intentionally tossed in his direction. That was probably the start of a race that is still going on—the race between armor and armament.

Through the centuries man has been spending literally millions of dollars for guarding his vital organs and, almost always for protection in combat with a determined enemy who was trying his best to inflict mortal wounds. But an even more implacable enemy has crossed swords with many people engaged in peaceful pursuits today. It never quits, it takes advantage of every laxity and "never gives a sucker a break." It has been harassing the human race since man first undertook to make and build things. It has yet to be completely conquered although in recent years our defensive controls have been more and more effective.

Some people call it "fate," some people call it "bad luck" but we know it as "industrially incurred injuries."

As is well known, protective equipment does not stop accidents. It can and does prevent or minimize greatly the injury that would have resulted from the accident. To that extent, the protection or armor is somewhat ahead in the race with the objects that are striking us.

The successful use of helmets by armed forces through the ages finds a similar application in the popular hard hat used in industry today. There are many instances where hard hats have stopped falling objects that surely would have resulted in fatalities had this protection not

been worn; so many in fact that the hard hat should stand high on any list of effective protective devices. It is comfortable, a variety of winter liners are available, and from personal experience, one gets accustomed to wearing a hard hat very quickly.

Combination hard hats and welders' helmets are available to provide protection to the welder from possible falling objects. This is a splendid development because while a welder is engaged in his work, with his helmet in place, he is concentrating on just one thing—laying a good solid bead of metal—and consequently cannot be expected to be as alert to possible hazards as another man who does not have his attention and vision so restricted.

Another special application of the hard hat is the type built for protection against possible contact with exposed electrical conductors. In this instance, while impact protection is provided, the major objective is guarding against electrical shock. This type of special hard hat is being used increasingly by public utility line crews.

It is interesting to note that an adaptation of the principle of the hard hat has found its way into baseball caps to afford some measure of protection for the batter from the "bean ball," and lacrosse players have worn protective caps for years. Take a look at the modern football helmet. It is a specialized hard hat.

These examples are cited to show that many other people are recognizing a definite hazard and consider it smart business to protect themselves accordingly. To those people who are reluctant, for any one of several reasons, to wear effective protective equipment, perhaps the example of literally thousands of top-flight athletes will be convincing.

Garments of many types are available for protection against the variety of molten matter used in modern industry. They are made of 2½-lb. asbestos, aluminized light weight asbestos, 32-oz. virgin and reprocessed wool, 20-oz. wool and a variety of cotton fabrics treated in many ways to make them fire resistant.

The selection of the material is guided by the temperature of the

CARTER KENDALL is Safety Engineer, Bethlehem Steel Company, Bethlehem, Pa. This article has been condensed from a paper before the 25th Annual Safety Convention, Greater New York Safety Council, April 1955.





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Highly styled to give the appearance of personal glasses, yet ruggedly constructed for complete safety. New L-1 shaped lenses conform to the eye area for greater protection. New full floating rocking nose pads, new skull temples give added comfort. New stronger temple joint. Frames of metal or acetate, in a complete range of lens and bridge sizes. Skull or cable temples available on all frames. Side shields in wire screen, clear or green acetate.



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A complete variety of styles for chipping, grinding, welding, dust and splash hazard jobs. Designed for maximum eye safety and comfort; exceeds Federal Specifications requirements. Adjustable ball chain nose bridge. Perfect fitting, individually molded left and right eye cups. Over 300 perforations in side shield. Free turning lens ring for easy changing. Wide range of lens types available; precision ground and hardened for optical perfection.



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Finest face protection for spot, flash and butt welding, sawing, chemical work, buffing, light grinding, etc. Comfortable headgear design...no "break-in." Tough fibre parts are cut on radius to form oval-shaped (not round) natural contours. Adjustment for head size is easily made and stays put, no slipping. "Snap-on" replaceable windows, available in clear or green plastic, or wire screen, in a wide range of sizes and thicknesses.

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# SEECLOTH

## FOGPROOFS GLASS AND PLASTIC

### WHAT SEECLOTH IS:

SEECLOTH is a chemically treated fabric which when rubbed on glass both cleans and prevents fogging or misting. It has found use in industry as a convenient method for cleaning and preventing the fogging of goggles or workers who must protect their eyes in various industrial operations.

### ECONOMICAL:

It is the most convenient and economical method known for this purpose. One piece (8" x 9") will last for six months or more when used on goggles or glasses, and kept clean and dry.

### INCREASES WORKER SAFETY:

The fact that the worker has the means for preventing misting of his goggles right on the job increases the safety of the operation since it reduces the temptation to continue to work with misted glasses. He can fogproof them without leaving his work.

### HOW TO USE SEECLOTH:

All that is necessary is to wipe the very slightly moistened glasses with the dry SEECLOTH and thus mistproof the glasses for a considerable period.

### OTHER USES:

SEECLOTH has also found use in preventing misting of the inside of windshields in foggy or damp weather. Here also all that is necessary is to rub the dry or very slightly moistened glass surface with the dry SEECLOTH. Mist will then not form on the area that is rubbed. Other applications include its use on spectacles, mirrors, windows, etc.

### HOW SEECLOTH IS PACKAGED:

3" x 8" pieces (not individually packaged). Suitable for eye-glasses and may be kept in the case with the glasses. 8" x 9" pieces (individually packaged in 3½" x 6" polyethylene envelope). Suitable for goggles and masks and fits easily in the pocket of coveralls. 12" x 18" and 16" x 18" pieces (individually packaged in 5" x 10" polyethylene envelopes). Suitable for automobile windshields, household use, etc., and fits comfortably in the glove compartment of a car or in the drawer of a kitchen cabinet.

In addition to the standard sizes listed above SEECLOTH will be cut to special sizes on order and is also available by the yard—36" wide.



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molten matter that can spill or splash, the mass of the possible splashing matter and the frequency of splashes. Working with molten glass or steel requires the utmost in protection, while the sparks from spot welding and burning and the splash of solder can be protected against by relatively lighter fabrics.

Body protection for arcwelders on production work requiring high amperage, usually consists of chrome-tanned leather, cape sleeves or full jackets and chaps, aprons or trousers, depending upon the type of work being done. Mobility of the

welder should not be overlooked, neither should his proximity to other production welders.

Protection of the body against impact and against sharp objects is provided by substantially built aprons of heavy canvas or leather. Some leather aprons are further strengthened by steel staples set close together. Kick-back aprons of various types are available, reinforced by heavy fiber or composed of metal mesh. Aprons are available in a variety of lengths for protection of the lower abdomen, the bibtype for the upper body as well as the

abdomen and the split leg type for the crotch and upper legs as well.

The lower legs can be protected by leggings of any one of several types, or skin guards, depending upon the exposure. Heavy duck or leather, reinforced with steel strips are available with or without a flare at the instep to afford some protection to the metatarsal arch.

Virtually all of the general types of protective equipment so far described are available in rubber, synthetic rubber or plastics or plastic-coated fabrics to protect against paints and the splash of chemical solutions of various types. Highly specialized protective equipment is obtainable for protection against x-ray and radioactive isotopes.

For protecting hands and forearms there is a veritable multitude of gloves and wristlets available of almost every type of material, canvas, leather, asbestos, plastic and plastic coated, steel studded or plain, double layers, lined and unlined. There are types suitable for every job and if an attempt were made in this paper to describe all of them and all of their uses for safeguarding workmen we would not be able to leave this room in time for dinner tonight. It is suggested therefore, that if hand and forearm protection is a problem, your supplier be consulted.

In summation it may be said that in the entire body protection field, the need for specialized protection has been recognized and the equipment is available. The exposure must be identified and the hazard defined else time will be wasted in getting the proper protective equipment on the men who are exposed.



## SAFETY HAT... CAP with full floating HEADGEAR... adjustable sizes 6½ to 8

Molded, from a flame retardent, waterproof material in seven different brilliant, permanent colors—red, yellow, blue, white, grey, green, brown—"SUPERGARD" exceeds all Government Specs. for impact, penetration, electrical resistance, flammability, etc. . . . In the various adjustments, each change is positive and secure. Cool and well ventilated, for wearing in the sun—"SUPERGARD" is also supplied with a half-liner for frosty weather and a full-liner for frigid temperatures. There is no metal of any kind in its construction.

Easily sterilized, there is nothing that need be replaced in "SUPERGARD," when it is reissued, but the wrinkle free sweat-band which comes in leather or leatherette . . . "SUPERGARD" is also available with goggles; faceshield; welding helmet . . . Send for completely descriptive catalog page and prices.

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### PERSONAL PROTECTION OFF THE JOB

Many safety-minded employees carry the lessons learned on the job to their homes and wouldn't think of working around the house or yard without using the same protection prescribed at the plant.

Welding helmets and gas masks are not indicated for many do-it-yourself projects but goggles and safety shoes are frequently worn. If more specialized equipment should be needed, companies are usually glad to lend it. Use of safety equipment off-the-job makes good stories for the employee publication.

One case out of the ordinary involved an employee who got slugged on the way home from work. Fortunately, he was still wearing his hard hat.

## Reading Aid for the Visually Handicapped

A new reading aid that magnifies reading material is now available to people handicapped by poor vision. It is designated to help those who



cannot read ordinary books, newspapers or letters, even with glasses. Known as the Projection Magnifier, this instrument projects a three- or five-times enlarged image of reading material on its built-in illuminated screen, where it can be read easily for prolonged periods at a comfortable reading distance.

The Magnifier is the result of five years of research by the staff of The Franklin Institute Laboratories for Research and Development, Philadelphia, with the support of the W. K. Kellogg Foundation of Battle Creek, Mich. The American Optical Company manufactures the instrument.

The Projection Magnifier makes reading nearly as normal and easy for the visually handicapped as it

is for those who have unimpaired sight. It is small, light and rugged enough to be portable. It adjusts automatically to accommodate reading material of almost any size or thickness. Illumination is provided by one 40-watt lamp.

The screen is 12 in. wide by 4½ in. high, which means that at three-times magnification a line of print originally 3% in. long will appear within the screen, and at five-times a line originally 2% in. long.

A Magnifier with three-times magnification will permit even more material to be seen at once. The

reader scans across a wide page simply by sliding the bookrest to the left. He reads down a page by sliding the bookrest away from him. In other words, the reader moves material under the device in the same manner as though he were viewing it through a stationary port or window.

The screen has a Fresnel lens designed to produce even contrast from edge to edge and to give equal focus at every point. The room need not be darkened, as long as a bright light is not directly in front or in back of the user.

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## The Big Safety News of the Month!

### SELLSTROM BUYS THE SAFETY EQUIPMENT DIVISION OF THE PENNSYLVANIA OPTICAL COMPANY

As another expansion move, and a gigantic step forward, the Sellstrom Company has purchased the Industrial Safety Equipment Division of the Pennsylvania Optical Company.

This additional equipment will greatly increase our manufacturing facilities. And these new safety products will be sold under our name. All materials, inventories, molds and equipment has been moved to our new, modern plant in Palatine, Ill. This is in addition to the other eye and face safeguards which Sellstrom has manufactured for the past thirty-two years.

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• Send for our new brochure No. 32-F, or request general catalog No. 32 for information on Fibre Glass and Fibre Welding Helmets, Face Shields, Respirators and other Sellstrom safeguards.

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### TO CONSERVE EYES

1. Make periodic surveys of work areas for eye hazards.
2. Provide type of protection suitable for the job—goggles, shields, masks, hoods, etc.
3. Make provisions for corrective lenses for those who need them.
4. Provide adjusting service and encourage employees to keep goggles in adjustment.
5. Be sure that all those in the work area have goggles, including employees from other departments.
6. Encourage employees to report foreign bodies in the eyes immediately for medical treatment.
7. Supervisors should wear goggles for their own protection as well as for the example to employees.
8. Insist on eye protection for visitors as well as for workers.

## Urges Lower Limits For Radiation Exposure

DELEGATES to the Nuclear Engineering and Science Congress which met in Cleveland in December heard a strong recommendation that maximum permissible occupational exposure to radiations in atomic power plants should be reduced to one-tenth the limit approved by the National Committee on Radiation Protection.

G. Hoyt Whipple, speaking under the auspices of The American Society of Mechanical Engineers, one of the sponsors of the congress, said that the committee's recommendation of 0.3 roentgen per week is too high, and that proper regard for the control of radiation hazards in plant design will not only reduce the risks to employees, but will also reduce operating costs.

Dr. Whipple is employed on the University of Rochester Atomic Energy Project, and is health consultant to Atomic Power Development Associates, Inc., Detroit.

He is a past president of The American Society for Experimental Pathology and of The American Association of Pathologists and Bacteriologists.

The committee has made it clear that its concept of a maximum permissible exposure does not entirely preclude the possibility of radiation injury to the exposed individual, or to succeeding generations, Dr. Whipple pointed out. It is the committee's intent, however, that the probability of such injuries should be so low that the risk will be readily acceptable to the average individual.

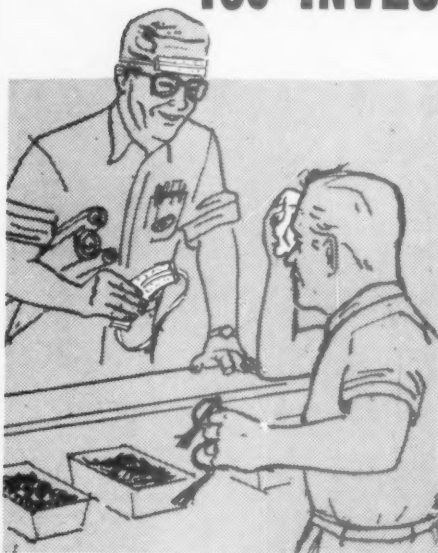
It has been found from extensive animal experimentation that repeated small doses of radiation reduce life expectancy in direct proportion to the total dose received. It also appears from these experiments that the shortening per roentgen is relatively constant among the various species of animals, at about one per cent per 100 roentgens. It has been noted that their deaths resulted from the same causes as for individuals in the unirradiated

control group. It has been impossible to assign radiation as the cause of death in any individual case.

If a man received 0.3 roentgen each week for 30 years, his total dose would be 450 roentgens. The available life-span shortening data suggests that this dose will reduce life expectancy about three years. For comparative purposes, Mr. Whipple gave life insurance statistics that show the life expectancy of the average 30-year-old white male in the United States is reduced 0.9 years by accidents of all kinds, and 1.8 years by cancer. Thus it is evident that the risk from radiations is great enough to warrant some effort to reduce it. If the occupation exposure can be reduced to 0.03 roentgen per week, the life expectancy reduction from a lifetime of work will be about four months, a risk that is acceptable to most people.

The genetic mutations induced by radiation have also aroused interest and some bitter controversy, it was reported. However,

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Here's proof that StaSafe Koolpads, mopping up perspiration, cut labor costs:

Take one man wearing glasses or goggles during the hot summer months. He frequently stops work to, 1) take out his handkerchief, 2) take off his glasses, 3) mop his forehead, 4) wipe his glasses, 5) replace his glasses, 6) replace his handkerchief, and finally 7) return to work. At today's wage scale, you pay a high penalty in lost labor and a higher penalty in lost production.

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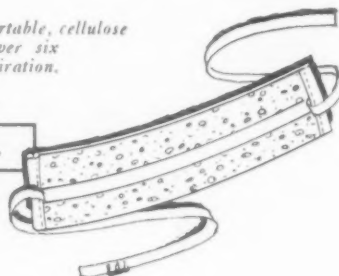
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geneticists generally agree that radiation applied to the reproductive cells of living organisms will induce changes in the genetic material of these cells. The number of these changes is in direct proportion to the amount of the dose. Genetic changes of this sort are usually detrimental. It is not possible to predict how much risk there is in any given radiation exposure, but it is estimated that a dose of 100 to 200 roentgens to every individual in one generation will double the mutation burden in the next generation. The risk of genetic mutations is not to the individual who receives the radiation, but to his children and to succeeding generations. "The problem of the genetic effects of occupational radiation exposure is one of conservation: conservation of the human race, if you will," Dr. Whipple said.

One-tenth of the NCRP maximum permissible exposure has been adopted as a working criterion for a number of installations, and every reasonable effort

is made to reduce the average exposure below this amount. For example, the average exposure to all Hanford and Oak Ridge workers during 1949 was 0.004 roentgen per week, which amounts to little more than double the dose received from cosmic radiation and natural radioactive materials. The weekly average of the ten highest exposures of Oak Ridge workers for 1949 was about 0.08 roentgen per week, or roughly one-fourth of the permissible maximum.

The sources of radiation and methods of controlling them in nuclear power plants in order to minimize hazards to workers and people who live near these plants were discussed at length. An important distinction was made between radiation from fixed sources and contamination by radioactive material that escapes into the air to be breathed, into water that may be drunk or may contaminate fish that people eat, into dust particles that may become lodged on food and thus enter the body,

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and onto personal property that is carried into and out of a plant.

It was pointed out that exposure for people outside a radioactive installation is commonly limited to one-tenth of that allowed people in the plant, but that this does not necessarily assure one-tenth of the hazard. It provides for the fact that plant neighbors can be at home 168 hours a week, whereas a worker is in the plant not more than 40 hours a week; also that the general public is not required to submit regularly to tests.

The single most important factor in controlling radiation hazards in a power plant was said to be the attitude of everyone in the plant. Careful selection of personnel and painstaking instruction on the hazards of radiation and in using protective methods and devices are essential. Radiation instruments for the detection of radiations and their effect upon personnel assure their safety when properly used.

Although the control of radiation hazards adds significantly to the total cost of plant construction, this cost must be evaluated in terms of savings they will permit in operating costs, which will be paid throughout the life of the plant. As an example, it was assumed that replacement of defective equipment might require two man-hours of work where the radiation level is 10 roentgens per hour. If two roentgens are permitted in a single exposure, followed by 13 weeks without any exposure, the replacement job would require at least 10 men, each working 12 minutes. If there is no radiation-free work in the plant for these men to do, the cost of the replacement job can be as high as two and one-half man-years.

In a properly designed plant, failures in high radiation areas will be minimized, time and dose rates required for repairs will be minimized, and a large portion of the plant will be at low enough radiation levels to permit radiation-free work by men who have received special work exposures.

Those who cannot remember the past are doomed to repeat it.  
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# THE SAFETY LIBRARY



**Books, pamphlets and periodicals of interest to safety men**

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## BOOKS AND PAMPHLETS

### Building Codes

*National Building Code.* National Board of Fire Underwriters, 85 John St., New York 38. 1955. Abbreviated edition. 75 p. Free.

### Carbon Monoxide

*Methods for Detecting and Determining Carbon Monoxide.* R. L. Beatty, U. S. Bureau of Mines. (Rev. of Technical Paper 582) 1955. Bulletin 557. 30c. For sale by Superintendent of Documents, Washington 25, D. C.

### Chemicals

*Hydrogen Peroxide, Properties and Essential Information for Safe Handling and Use.* Manufacturing Chemists' Association. Rev. 1955. 17 p. 30c. Chemical Safety Data Sheet SD-53.

*Naphthalene, Properties and Essential Information for Safe Handling and Use.* Manufacturing Chemists' Association. 1956. 12 p. 30c. Chemical Safety Data Sheet SD-53.

### Fire Prevention

*Manual of Fire-Loss Prevention of the Federal Fire Council.* 1955. 3rd ed. 187 p. 50c. For sale by Superintendent of Documents, Washington 25, D. C.

### Lumber Industry

*Disabling Work Injuries, Forest Products Industries, 1954.* 1956. 10 p. California Division of Labor Statistics and Research.

### Mines

*Accident Prevention in Nonferrous-Metal Processing Plants—Section 3 Smelters, Refineries and Re-*

*duction Plants.* U. S. Bureau of Mines. 1955. 499 p. \$2.00. For sale by the Superintendent of Documents, Washington 25, D. C.

*Accidents from Hoisting and Haulage at Metal and Nonmetallic Mines.* U. S. Bureau of Mines. Rev. 1955. 110 p. Miner's Circular 53. 40c. For sale by Superintendent of Documents, Washington 25, D. C.

*Disabling Work Injuries at Underground Mines in California.* California Division of Labor Standards and Research. 1955. 64 p.

*Injury Experience in Coal Mining, 1952.* U. S. Bureau of Mines, 1955. 60 p. Bulletin 559. 35c. For sale by Superintendent of Documents, Washington 25, D. C.

*Injury Experience in Coal Mining, 1955.* 60 p. Bulletin 559. 35c. For sale by Superintendent of Documents, Washington 25, D. C.

*Injury Experience in Coal Mining, 1951.* U. S. Bureau of Mines, 1955. 73 p. Bulletin 549. 40c. For sale by Superintendent of Documents, Washington 25, D. C.

### Nurses

*Contemporary Developments in Occupational Health. Second Annual Workshop in Industrial Nursing,*

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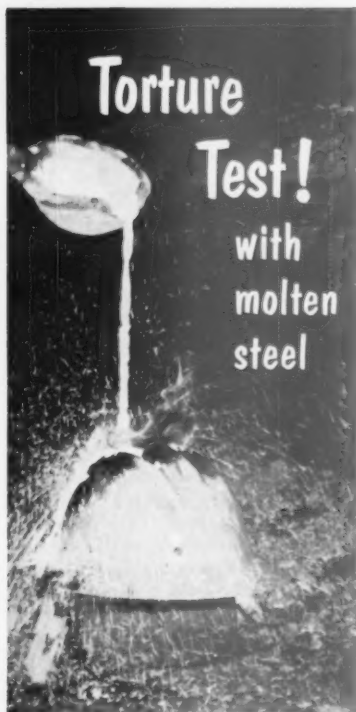
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May 13-14, 1955. University of Oklahoma, School of Medicine, Attention, J. S. Felton, M.D., 801 N. E. 13th St., Oklahoma City 4, Okla. 1955. 182 p. \$2.00.

#### Radiation

*Regulation of Radiation Exposure by Legislative Means.* U. S. Bureau of Standards. 1955. 60 p. 25c. Handbook 61. For sale by Superintendent of Documents, Washington 25, D. C.

#### X-ray

*X-ray Protection, National Bureau of Standards.* 1955. 41 p. 20c. For sale by Superintendent of Documents, Washington 25, D. C.

### MAGAZINE ARTICLES

#### Air Pollution

"Community Air Pollution, A Developing Health Problem." Justin M. Andrews, *Public Health Reports*. Vol. 71, No. 1, Jan. 1956, p. 37-41.

#### Construction

"Water Brought in Safely." *New York Industrial Bulletin*. Dec. 1955, p. 12.

#### Gases

"Oxygen Is Like a Woman." *British Columbia Lumberman*. Dec. 1955, p. 48-49.

#### Handling Material

"Car and Truck Loading Kinks

May Require Special Aids." *The National Provisioner*. Jan. 21, 1956, p. 14.

#### Lead Poisoning

"Lead Absorption Experiences in the Manufacture of Electric Storage Batteries." Gilbert B. Meyers, *Industrial Medicine and Surgery*. Jan. 1956, p. 4.

#### Machine Shops

"Stop Those Shop Accidents." Paul Lockwood, *Modern Machine Shop*. Jan. 1956, p. 124-127.

#### Maintenance

"Establishing a Preventive Maintenance Program." B. F. Rygh, *Supervisory Management*. Jan. 1956, p. 9.

"How to Put Safety Into Maintenance." Chester Webb, *Coal Age*. Jan. 1956, p. 66-67.

#### Management

"Effective Management Controls Accidents." Arthur S. Johnson, *Loss Control*. Jan. 1956, p. 7.

#### Psychology

"Have You Triggered an Accident Lately?" Dawson F. Dean, *Supervisory Management*. Jan. 1956, p. 19.

#### Radiation

"Radioactive Materials—Their Relation to Industrial Fire Protection." *Factory Mutual Record*. Jan. 1956, p. 4-5.

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## Turtle Club Still Growing In Sixth Year

"Shell on head—we're not dead."

That's the slogan of the International Turtle Club, whose members are men whose lives have been saved by hard hats. The club, so named (according to its constitution and by-laws) because the turtle is "one of the earliest exponents of using a hard shell over his head for protection," was the brainchild of C. R. "Rusty" Rustemeyer, safety director for Canadian Forest Products, Ltd., Vancouver, B. C.

Its first sponsor was Fleck Bros. Limited, a Vancouver logging supply company.

The club gained national status in the United States in 1950 under the sponsorship of E. W. Bullard, president of E. D. Bullard Company.

Applications for membership are carefully reviewed to establish their authenticity. Application forms must be accompanied by a copy of the first-aid or compensation reports or by verification in writing by two other persons.

Honorary memberships are open to persons not qualified by life-saving claims but who have contributed to the saving of others by their work for head protection.

Members receive without charge a

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## New York Conference To Meet April 16-20

Six thousand accident prevention workers from all parts of the nation will gather in New York for five days of conferences, beginning April 16.

New York's 26th annual Safety Convention and Exposition will be held in the Hotel Statler under the sponsorship of the Greater New York Safety Council. Supporting the accident reduction effort are 82 co-operating agencies, among them the Army, Navy, Atomic Energy Commission, Red Cross, branches of city and state government, and business, civic and engineering organizations.

There will be sixty sessions, covering almost all phases of traffic, industrial, home, school and public safety.

New York City will officially observe "Greater Safety Week" over the convention period.

The Safety Council will hold, in conjunction with the convention, an exposition of latest safety developments.



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GLARESTOPPER	#3	Dark Sage Green

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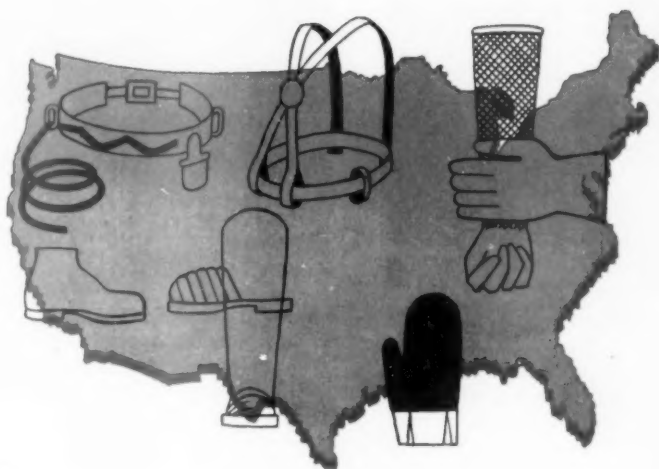
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# PERSONAL PROTECTION—PART II



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6

**P**ARTS of the body below the neck figure prominently in accident records and account for a large proportion of the compensation paid.

The trunk, which includes the vulnerable spine, contributes some 27 per cent of the injuries and 28 per cent of the compensation, reflecting the high cost of back injuries.

Toes account for a surprisingly small percentage of both cases and compensation—4 per cent and 2 per cent respectively. For this record much of the credit goes to safety shoes.

Fingers are much more difficult to protect. They cannot be shielded in rigid armor like toes, and work gets them into many danger zones.

Finger injuries account for 16 per cent of the injuries and 13 per cent of the compensation. Many of these undoubtedly are infected cuts and lacerations which might have been prevented by stout work gloves.

For legs, the percentage is 12 for cases and the same for compensation.

For hands, it is 9 and 6; for feet, 8 and 6.

Frequent injuries to any part of the body call for a study of working conditions. The remedy may be a change of methods, use of personal protective equipment, or both.

# FOOT PROTECTION

**SAFETY SHOES** for industrial use may be classified in five general categories according to construction and intended use:

1. Safety toe (general use)
2. Conductive
3. Explosives operations (non-sparking)
4. Electrical hazard (shock-resisting)
5. Foundry

Special styles for women are provided in classes 1, 2 and 3.

As generally used, the term "safety shoe" means a shoe with a reinforced toe. Steel toe boxes are specified for most occupations because of their ability to resist heavy blows.

Around electrical equipment, where impact resistance must be compromised with the need for insulation, toe boxes of fiber or plastic are used.

## STANDARDS

American War Standards, Z41 Series, American Standards Association, are still the accepted guide for purchasers of safety shoes.

Specifications call for a well-constructed, durable work shoe with a toe reinforced by a steel cap. The cap is supported on a flange resting on the sole. It must support a static load of 2500 lbs. and resist the impact of a 50-lb. weight dropped one foot. When subjected to either test, the inside of the toecap must not

come closer than one-half inch from the upper surface of the sole.

Strength requirements for shoes for both men and women are identical.

Shoes meeting these requirements bear an identification stamp on one shoe of each pair. The stamp indicates the type of shoe according to the code classification.

## DISTRIBUTION

To secure acceptance of foot protection, safety shoes must be comfortable and properly fitted. Purchasing must also be made convenient.

Many of the larger companies maintain well equipped stores with a wide range of lasts and sizes and trained attendants to fit the shoes. Shoes are sold at cost and employees may buy them on the payroll deduction plan. Safety shoes are sometimes awarded as contest prizes.

Smaller plants are not always in a position to stock an adequate range of sizes or provide expert fitting service. Many companies have made arrangements with local shoe dealers whereby employees may purchase shoes through payroll deduction.

A mobile shoe service is offered by dealers in some areas. A truck equipped as a shoe store is manned by an experienced fitter who is responsible for all adjustments. A



A refinery worker puts on a new pair of safety shoes won at a safety rally. (Pan-Am Southern Corp.)

variety of styles and full range of sizes are carried. Periodic visits are arranged and between visits shoes can be obtained quickly on special order.

This service is rendered on a moderate mark-up basis and the plant can charge the employee any part of the cost.

It is desirable for a worker to have more than one pair of safety shoes so they can be rotated. Shoes will last longer and be easier on the feet. The wearer will also have a pair available while the other is being repaired.

Many companies encourage purchase of safety shoes for wear off the job. They know that the buyer's feet will be protected when the shoes end their days on the job.

**Records** for each employee should be kept. A 3 x 5 inch card shows name, department, payroll number, and details of each transaction. These include date, stock number, size, width, price, and payment. The reverse side of the card carries such information as history, details of foot trouble, and other comments.

## TYPES OF SHOES

Safety shoes, generally, are well made on lasts designed for comfort. They are available in many types and styles, some suitable for street wear. The protective toecap does not add appreciably to the weight or cost of the shoe.

**General purpose shoe.** The most widely used type is the blucher, in high cut or oxford styles. It is avail-



Several makes of safety shoes in many models are carried in this well-equipped company shoe store. Pleasant surroundings and experienced fitters help sales.



able in a wide range of sizes, widths and lasts, ranging from rugged, heavy-duty styles to those suitable for street wear. It is the basic type, with certain differences in detail for special occupations.

**Foundry shoes.** An early type of safety shoe still in use is the foundry shoe with elastic panels at the sides. There is no opening on the instep where molten metal or hot sand can penetrate and the shoe can be pulled off quickly in an emergency. This model is furnished with steel box toe.

**Spark-proof shoes.** Shoes with brass hooks and eyelets and brass nailed heels are worn in some industries where sparks from iron or steel might ignite flammable gases.

**Shock-resisting shoes.** Some are non-metallic with fiber box toes; others have steel box toes which are partially insulated. These shoes are designed for work around electric current. They are also worn by those handling flammable materials, by workers in explosives plants, and in grain products refining operations.

**Conductive shoes** are designed to drain off static charges prevent their building up in the body to the point where they could cause a spark.

The conductivity of these shoes is affected by other conditions. Wool, natural silk and nylon socks act as insulators to the body; cotton, lisle or rayon are satisfactory. Foot powder also serves as an insulator.

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Types of industrial footwear: Sats, rubber boots, wooden-soled shoes, women's safety shoes, wooden sandals worn over shoes on hot surfaces, men's steel-toe shoes.

The floor as well as the shoes must be conductive.

**Rubber footwear.** Where work must be done in deep mud or in water, rubber boots contribute to health, comfort and safety. Rubber boots are available with steel box toes.

#### SOLES AND HEELS

**Leather** is comfortable and durable for normal conditions. Oak leather will not give satisfactory service where heat is excessive or where the shoe is subjected to continuous dampness. Chrome tanned leather is more resistant to heat.

**Rubber** is resistant to moisture, alkalis and most acids. It deteriorates quickly when exposed to grease, oil, solvents, some acids, or excessive heat.

**Neoprene** resists moisture, also grease, oil and solvents that would ruin rubber. It stands up well against cutting and abrasion.

**Cord soles** and heels of rubber or neoprene, similar in construction to automobile tires give good traction under severe conditions for many operations.

**Cork** blended with the rubber or neoprene is an excellent material. Slip resistance is good and the soles are light and flexible. Cork also helps to insulate the feet against heat or cold.

**Wood soles** are used for extreme conditions of heat, dampness, oil, acids or caustics underfoot. They are popular in steel mills, foundries,

and other hot operations. They also afford protection against nails, broken glass, scrap metal, and other sharp objects.

Wooden-soled shoes can be obtained with steel toecaps or with guards which cover toes and insteps.

#### FOOT GUARDS

Where unusually heavy objects are handled, feet may need more protection than shoes with reinforced toes. For such work, there are foot guards of heavy gauge, flanged and corrugated metal.

The guards are strapped on over the shoes and protect the instep as well as the toes.

With the flange resting on a firm



Testing conductive shoes worn in hospital operating rooms, chemical and explosives plants, and other locations where a static spark might cause an explosion. Shoes must remain conductive, even after long wear.

floor surface, foot guards should stand an impact of at least 300 foot-pounds without being dented sufficiently to damage the shoe underneath or injure the foot.

Foot guards are also made with

soles of rubber or calked steel to minimize slipping hazards.

Combination shin-foot guards, with an aluminum alloy shin protector hinged to the foot guard, are available.

## LEG PROTECTION

**PROTECTION** for the legs is required in certain occupations where workers are exposed to the hazards of hot materials, corrosives, blows from sharp tools or heavy objects, and bites of poisonous snakes.

Garments commonly used for protection are:

- Spats
- Leggings
- Shin guards
- Knee pads

**Leggings.** Most of the leggings used in industry are worn by those who handle molten metal—in foundries, open hearth and blast furnaces. These leggings are available in asbestos, chrome leather and fireproofed duck and in spats, knee length and hip length.

Leggings for men who work with molten metal have flares to protect the instep and are free from projecting buckles and clasps. They can be removed instantly in an emergency.

Leggings for chemical workers are made from impregnated duck. They are available in ankle, knee and hip lengths.

In regions where poisonous snakes are a hazard, fiber leggings or high boots are worn by construction, public utility and farm workers. Cover-

ings of waterproofed duck protect the leggings against long wet grass.

**Shin guards** of metal or fiber provide important protection where axes or adzes are used. Shinguards are available separately or combined with metal footguards which cover the instep.

**Knee pads** are worn by electricians, pipefitters, riggers, cement workers, laborers and others who must kneel more or less continuously at work, particularly in confined spaces.

Two types are available. One consists of a rectangular pad or cushion about 10 by 14 in., made of chrome leather or asbestos cloth. This type is used for kneeling on hot surfaces. The other type is made of solid or sponge rubber molded to fit the contour of the knee. Straps keep the pads in place while the wearer is either kneeling or standing.

### MATERIALS

Materials commonly used are:

- Asbestos**—the preferred material for protection against molten metal, extreme heat and heavy sparks.
- Leather**, chrome tanned—for less severe exposure. Chrome leather, when new, is less resistant to splashes and sparks. With use it acquires a tougher surface. The operator should therefore keep out of the line of fire as much as possible until the garment is broken in.
- Fire resistant duck**—to ward off light splashes and sparks.
- Rubber, neoprene, plastic** and impregnated duck—for work with acids, alkalis and hot water.
- Lightweight metal or fiber**—for protection against blows from tools and heavy objects.

### Shoe Merchandizing For the Small Plant

The desirability of having employees wear safety shoes is never questioned by safety men—and sel-



Fiber-reinforced asbestos leggings protect foundry worker's legs against molten metal splashes. They can be removed with one quick pull in an emergency. (Westinghouse photo)

dom by management. Getting employees to buy safety shoes, however, still requires salesmanship.

The larger plants approach this problem by operating in-plant shoe stores at which safety shoes can be purchased at the wholesale price and on payroll deduction. This method is effective because safety shoes are of good quality and are sold at an attractive price.

The small plant is confronted with a serious problem in trying to operate its own shoe store. To provide a variety of sizes, widths, and styles, a large stock is necessary.

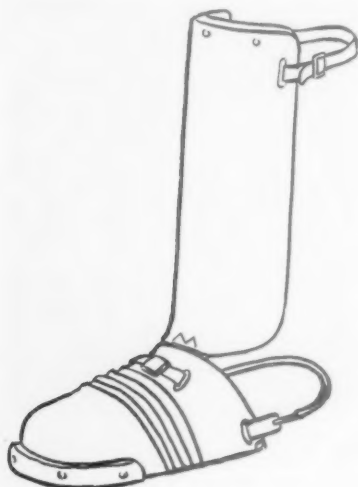
One pair of each normal size and width will require at least 32 pairs of shoes in stock but then if one sale is made, the store will be out of business for that size until the wholesaler sends a replacement pair. Thus there is a doubling up on the popular sizes, adding some 14 pairs in the center sizes.

The store now stocks 46 pairs of shoes but still only one style. To offer a choice of two or three styles, which is reasonable and certainly highly desirable would require a permanent stock of 100 to 150 pairs of shoes representing an investment of \$1000 or more.

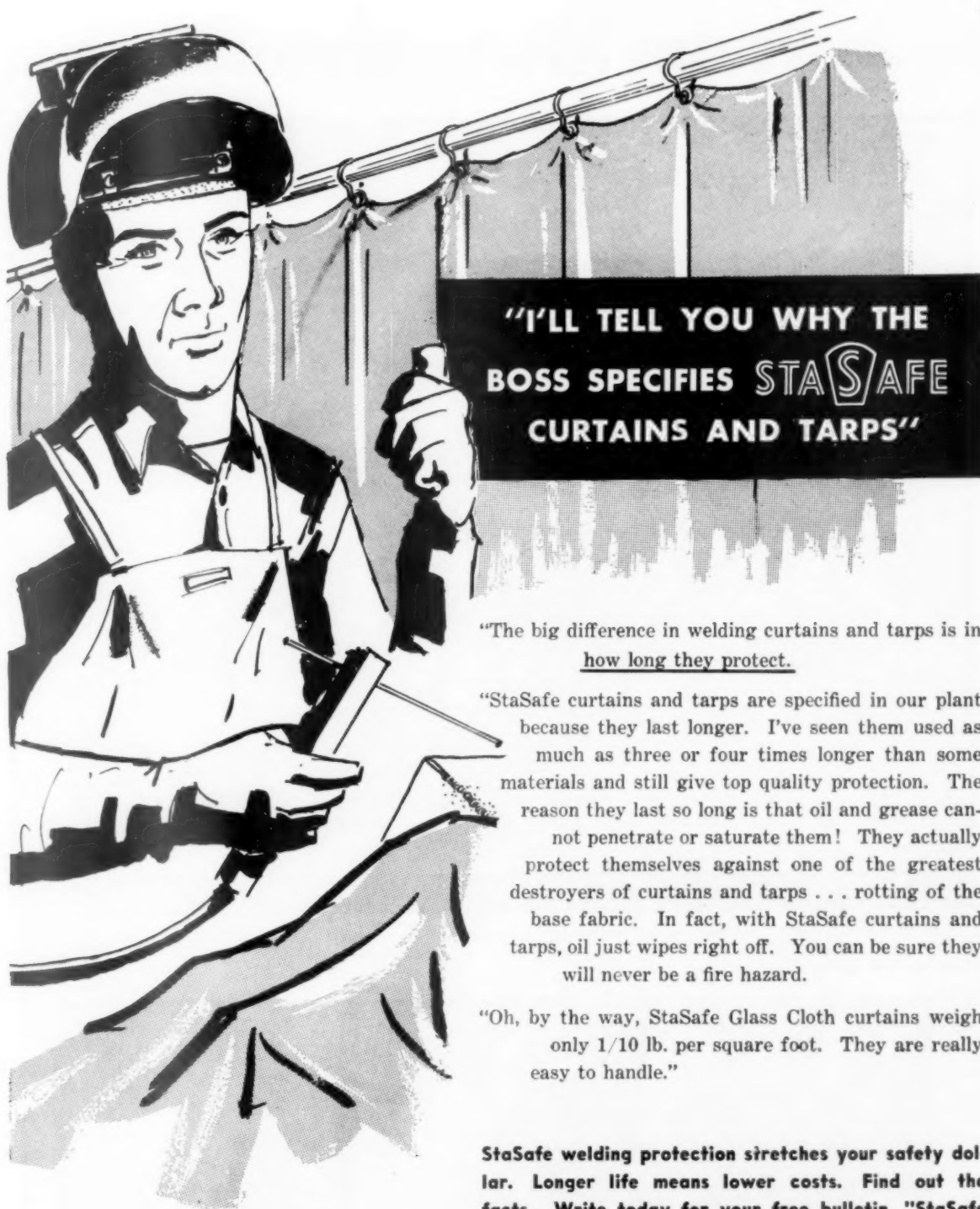
Even then, the small plant has to store these shoes, fit them, and handle complaints or adjustments. To do so requires space and equipment as well as the time of the person placed in charge.

One plant recognized that little headway would be made in an effective safety shoe program if a variety of styles and sizes was not easily

—To page 187



Combination foot and shin guard.



**"I'LL TELL YOU WHY THE  
BOSS SPECIFIES STASAFE  
CURTAINS AND TARPS"**

"The big difference in welding curtains and tarps is in how long they protect.

"StaSafe curtains and tarps are specified in our plant because they last longer. I've seen them used as much as three or four times longer than some materials and still give top quality protection. The reason they last so long is that oil and grease cannot penetrate or saturate them! They actually protect themselves against one of the greatest destroyers of curtains and tarps . . . rotting of the base fabric. In fact, with StaSafe curtains and tarps, oil just wipes right off. You can be sure they will never be a fire hazard.

"Oh, by the way, StaSafe Glass Cloth curtains weigh only 1/10 lb. per square foot. They are really easy to handle."

**StaSafe welding protection stretches your safety dollar. Longer life means lower costs. Find out the facts. Write today for your free bulletin, "StaSafe Curtains and Tarps".**

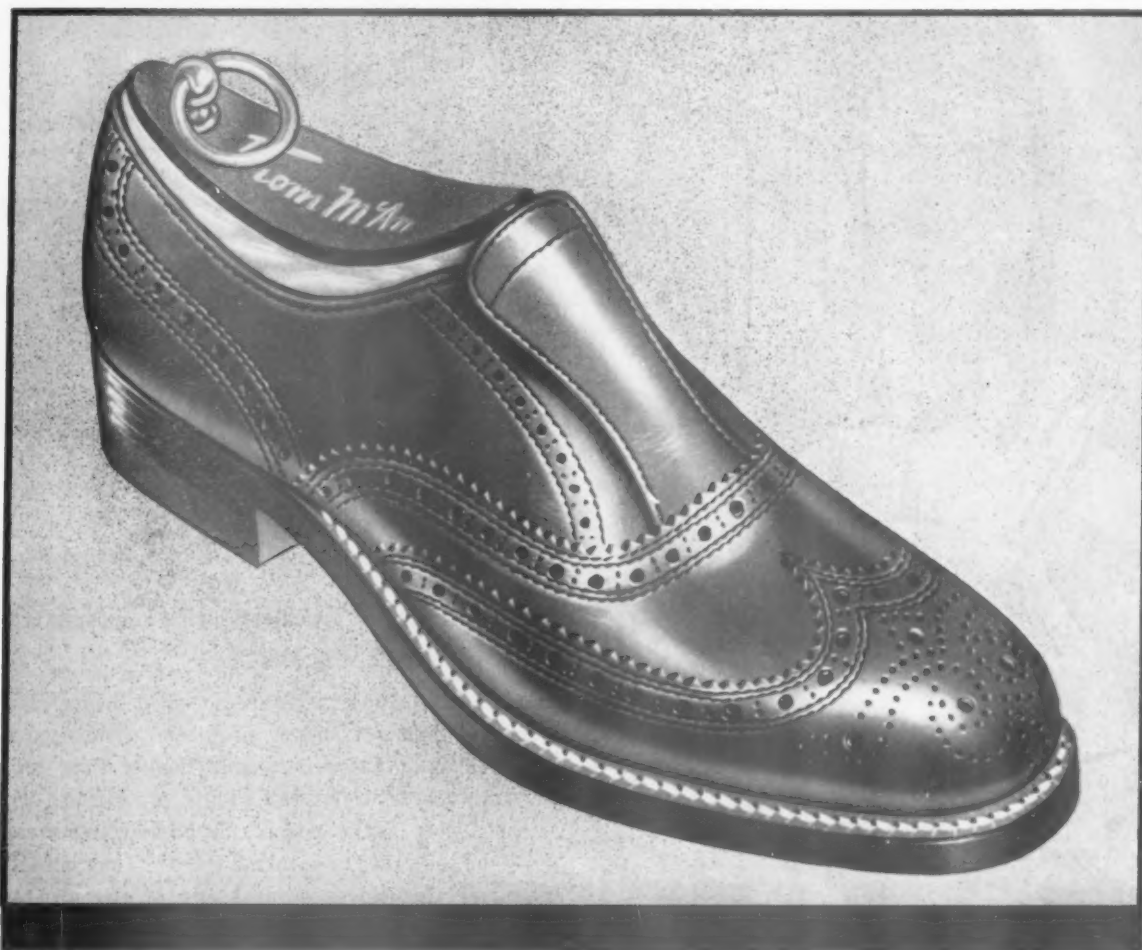
**STANDARD SAFETY EQUIPMENT COMPANY**  
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## Thom McAn announces a



Thom McAn's amazing new laceless safety shoe. In rich Mustang Brown leather. Leather sole and rubber heel. Talon "Shu-Lok" fastener that eliminates need for laces. Leather-lined steel toe box. #S-4304.



**Just lift** the outer tongue and this revolutionary shoe slips right off! The new Talon fastener is fool-proof. Easy to work. Eliminates bothersome laces that can become knotted, frayed and broken.

**Snap** the outer tongue back down and you can walk away in seconds. No bending over to tie and untie laces. The amazing Talon fastener will not come open except by unsnapping with your hand.

**New fastener** adjusts to fit every foot. Whatever the size of your instep, large or small, just two simple steps fit the shoe to your foot. You can make your shoe as tight or as loose-fitting as you wish.



# revolutionary new safety shoe that needs no laces!

**Amazing Talon "Shu-Lok"® fastener on this new Thom McAn eliminates bother and potential danger of laces.**

**T**HOM MCAN has taken the first really new idea for shoes in decades and applied it to safety shoes. The result — a brand-new safety shoe that needs no laces and provides *extra protection* for your instep.

Talon engineers worked for six years perfecting their "Shu-Lok" fastener. It snaps open and shut. Adjusts to fit every size of foot and instep. The metal backing of the tongue gives sensitive insteps added protection against falling objects. There are no laces to become entangled in machinery or trip you up.

The shoe itself is smartly styled in rich, Mustang Brown leather. Sturdily constructed for long wear. Carefully stitched with Thom McAn's traditional fine craftsmanship. And its tough steel toe box is leather-lined to protect feet against chafing. This shoe is meant to be worn in *comfort* — both on the job and after work.

If it's new, you'll find it in the Thom McAn Safety Shoe Line!

**SOLD TWO WAYS:** 1. At Thom McAn Stores. 2. Direct to your plant. Send today for details of our money-saving plant-sale plan and Thom McAn's 4-way employee purchase plan — plus descriptions of the Thom McAn Safety Shoe line. Write: Thom McAn Safety Division, 25 West 43rd Street, New York 36, N. Y.

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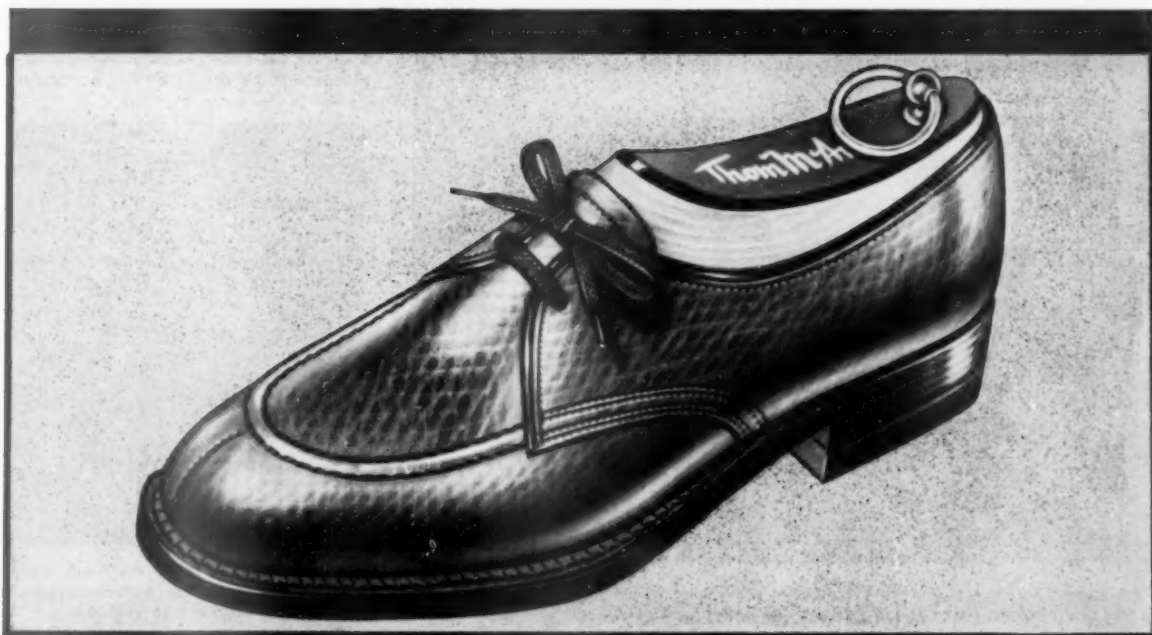
®Talon Inc.

## Thom McAn

**SAFETY SHOES**

**A Division of the Melville Shoe Corporation**

**Another new Thom McAn safety shoe! Racy, moccasin-toe Jaguar. Black glove-grain. Dress-weight. Leather-lined steel toe box. Leather sole. Rubber heel. #S-1375.**



# PROTECTIVE CLOTHING

**FOR MOST** plant work, the ordinary types of work clothing will give adequate protection against body injury. Garments should be clean, in good repair, and suitable for the job.

The following are essential in all work clothes:

- Adequate protection for the hazards of the job.
- Comfort and freedom of movement.
- Durability.
- Appearance.

Appearance is particularly important in equipping women workers but men are not indifferent to it.

Safety (protective) clothing refers to garments designed for hazardous jobs where ordinary work clothes do not provide sufficient protection.

Hazards requiring the use of protective garments include:

- Hot metal splashes.
- Sparks, as in welding.
- Flying objects.
- Fighting fires.
- Tapping furnaces.
- Shoulder bruises when carrying heavy loads.
- Splashing corrosive chemicals.
- Excessive moisture.
- Low temperatures.
- Sharp or rough edges.

Proper fitting is essential in all

work clothing. Long, loose sleeves may get caught in machinery. Trouser cuffs may cause tripping.

Clothing soaked in oil or flammable solvent is ignited easily. Any organic solvent, flammable or non-flammable, may cause skin irritation. Clean clothing is also a recognized aid to morale.

**Laundry service.** Laundered overalls, coveralls, aprons, smocks and other garments are furnished by the employer where extreme cleanliness is required in plant processes and where toxic materials are handled.

See chart on page 164 for types of garments and materials for various occupational exposures.

## STANDARDS

Specifications established by the Federal government have been widely used by private industry for many years. During World War II the American Standards Association approved a series of War Standards for Protective Occupational Clothing—Series 18. These are still accepted standards.

Specifications cover protection against sparks, molten metal, infrared and ultra-violet rays, and limited impact forces. Details of pattern, design, workmanship and range of sizes are also included.



Helmet, goggles, apron, sleevelets, gloves, and spats comprise the welder's outfit.

## MATERIALS

**Asbestos** has long been used for protection against intense heat and flame. Many garments are made of this material, including complete suits for fire-fighting and rescue work.

Wool clothing should be worn under asbestos garments where intense heat is encountered.

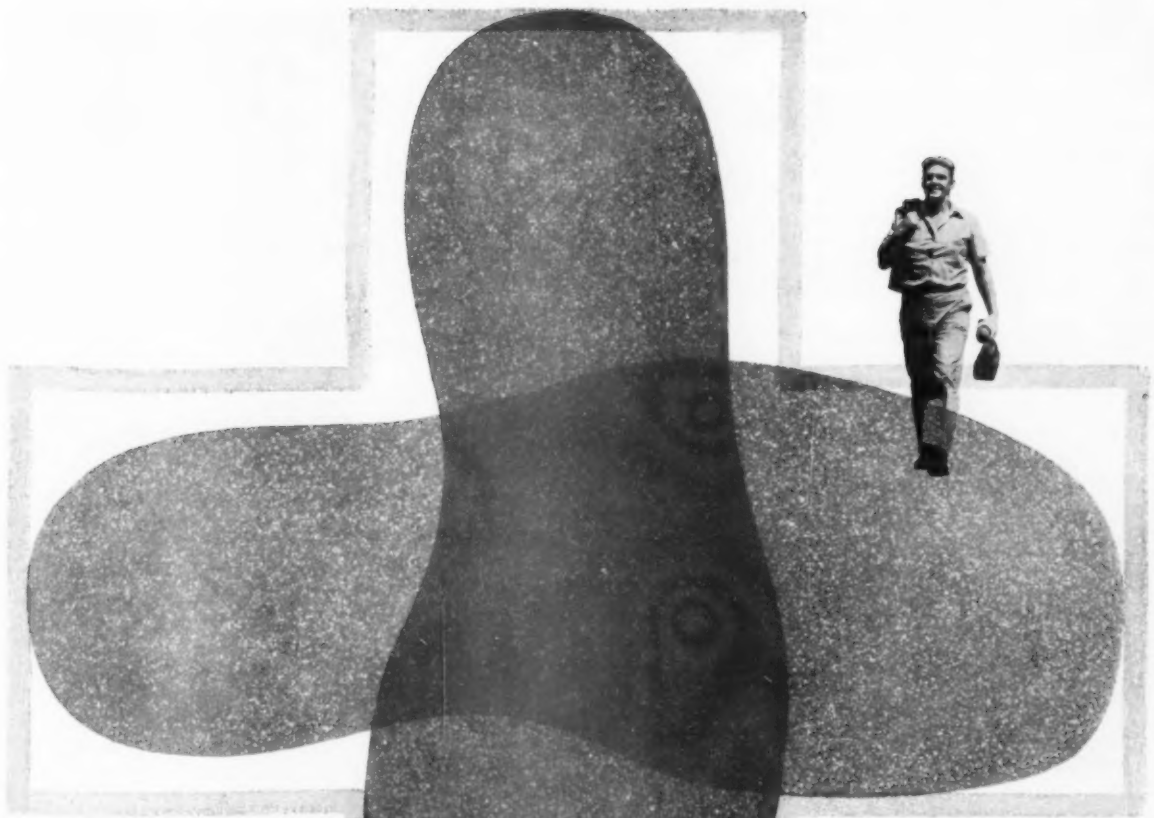
**Reflective material**, such as aluminum foil, is used with insulation material to provide a radiation barrier as well as to protect the wearer against conductive heat. Originally developed by the U. S. Air Force for



Display board of personal protective equipment circulates among departments of Mechanicville, N. Y., plant of West Virginia Pulp & Paper Company.



Aluminized suits covering the whole body afford a high degree of protection against radiant heat as high as 2500 F.



# **SAFER SAFETY SHOES HAVE VUL-CORK OR VUL-CORK NEOPRENE SOLES**

Vul-Cork Sole Division, Cambridge Rubber Co., Taneytown, Md., makers of **Vul-Cork®**  
... so light, so flexible, so resilient ... you can roll them up right in the palm of your hand.



fire-fighting and crash rescue work, these suits have found uses in industry and are available commercially.

**Leather** of various grades is used for protective garments. Chrometanned leather affords protection from sparks, molten metal splashes, and infra-red and ultra-violet rays. Leather, however, deteriorates under continued exposure to heat. For severe exposure, asbestos should be used.

Leather provides protection against limited impact. Padded leather or fabric aprons and hard fiber or metal protectors for the abdomen absorb much of the force of hard blows.

Leather reinforced by metal stitching or wire staples is resistant to cuts and abrasion.

**Impervious materials** of many types provide protection against dust, vapors, mists, moisture and corrosive liquids. They are useful in handling materials which would cause dermatitis or burns. This type of material includes rubber, neoprene and vinyl films and fabric coated with them.

**Rubber** resists acids, caustics and other corrosive substances, as well as moisture. Garments of rubberized fabric are used when handling low concentrations of acids and non-caustic liquids and for protection against weather. Rubber's high dielectric strength makes it useful where electricity is used.

**Neoprene** has numerous applications in safety equipment. It forms a tough durable film resistant to oils, solvents, acids and alkalis. It has high dielectric strength.

**Vinyl plastic** has many uses in safety equipment. For some garments the plastic is rolled or calendered onto fabric. For others the strong pliable film is used without backing.

**Flame-resistant duck**, a lightweight fabric, is quite strong and will outwear ordinary material used in work clothes. For protection against extreme heat, asbestos should be used.

**Water-resistant duck** is recommended in exposures to water and non-corrosive liquids. It combines strength and durability with light weight.

**Synthetic fabrics**, such as dynel, orlon and vinyon, are used for durable work clothing. These fabrics re-

sist acids, caustics, mildew, abrasion and tearing. They stand up well under repeated laundering. They should not be used where static sparks might cause an explosion.

**Aluminized duck** and drill are used for garments where radiated heat is a problem.

**Flameproofing.** Fabrics cannot be made non-combustible but some treatments provide limited fire resistance. There are two principal types of treatments, (1) Water soluble. (2) Weather resistant.

Commercial and home-made water soluble treatments are effective but must be renewed with each laundering. Weather-resistant treatments for canvas, duck, and other fabrics used for awnings, tent, tarpaulins, truck covers and welding curtains require special processing which can best be done by finishing mills or chemical companies equipped to do this work.

**Dust removal.** The practice of using compressed air to blow dust from hair and clothing may cause serious injury to eyes and ears. Brushes or vacuum equipment should be provided for this purpose and the use of compressed air forbidden.

#### WELDER'S CLOTHING

Protective clothing is as much a part of the arc welder's equipment as the helmet and goggles. Cotton shirts and dungarees worn in warm



Dynel work clothing has proved durable under heavy use and is more resistant to acids and chemicals than most fabrics. It is not a substitute for rubber, neoprene or vinyl for more severe exposures.

weather can be ignited quite easily. Garments of chrome-tanned leather may prevent serious burns.

Leather garments include overalls, pants, chaps, aprons, jackets, sleeves, gloves, mittens and spats.

Garments should be of good quality leather, solidly constructed. Fastenings must prevent gaping and should be so designed that the wearer can get out of the garment quickly. There should be no turned-up cuffs or other projections to catch hot metal. Pockets should be equipped with flaps.



A well-stocked store and attractive surroundings impress employees with the importance of safety equipment. (Humble Oil & Refining Co.)



# LET'S FACE IT!

only the  
**BEST**  
is good enough!

*Sawyer's*

**PROTECTIVE CLOTHING**

A bold statement? Certainly, and here's why we make it. Sawyer has pioneered the industry for more than 100 years in all phases of research, materials, equipment and manufacturing processes. Our Frog Brand clothing is made from highest quality base fabrics. No manufacturer subjects fabrics and raw materials to more exhaustive tests, both chemically and physically, than Sawyer! "Saturation Coating"? . . . "Multiple Coating"? . . . "Penetration Coating"? — call it what you will, its development was a Sawyer "first"! Double interlocked sewn seams, non-corrosive fastenings, clothing that won't bulk, clothing that is full cut for comfort — these and many more are the result of our exceptional "know how". What does this all add up to? . . . just this — Sawyer Neoprene Latex clothing for the protection of your personnel is

- guaranteed not to peel, blister or crack!\*
- guaranteed not to leak or come apart!\*
- tough! — yet light in weight!
- more pliable, more flexible — easier to work in!
- more resistant to chemicals, alkalis, temperatures, oils, greases, solvents, abrasion, etc.!
- easier to dry clean, launder or clean in petroleum solvent!
- designed with every feature necessary to guarantee more efficient, more durable, more economical wear!

\* in ordinary usage.



*Let us show you — let us prove to you... for the best protection you can get today, get Sawyer!*

**SAWYER Clothing also Rubberized or Oiled**

Industrial Suits	Lineman's Suits	Sleeves
Industrial Coats	Hip Leggings	Hats
Coveralls • Hoods	Fisherman's Suits	Spats
Miner's Suits	Butcher's Cuffs	Aprons

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**The H. M. SAWYER & SON Company**

A Division of Sawyer-Tower, Inc.

Specialists in Protective Clothing for more than a century

CAMBRIDGE 41, MASS.



H519 (Black)

H515 (Brown)



# IT PAYS TO LOOK TO **HY-TEST** FOR SAFETY *Built for*

Whatever the condition, whatever the need  
... HY-TEST is constantly on the alert, ready  
to provide *the* Safety Shoes best designed to  
meet the requirements of *your* workers.

**... AND IT DOESN'T COST A CENT  
TO LEARN MORE ABOUT THE  
HY-TEST SALES PACKAGE!**

There's more to the HY-TEST story than Safety Shoes alone. It shows you how to get *greater toe protection, lessen absenteeism, lower compensations, expand production, reduce unit costs and increase profits* with Plant Promotions and Safety Shoe Programs. Ask your HY-TEST Representative to give you the facts... or write or teletype St. Louis or Philadelphia.

# SHOES *the Job!*

Each one of the more than 80 HY-TEST styles of Oxfords, Shoes and Boots is "Built for the Job"... built to insure complete Foot Protection, Foot Health and Foot Comfort. No application is too difficult, no use too complex. If you have a Safety Shoe problem, look to HY-TEST... we have the answer.

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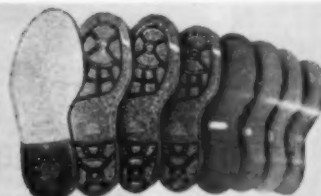
*Exclusive* ANCHOR FLANGE® Austempered  
STEEL BOX TOE



*Exclusive* BOL TAN Sweat-Resistant  
LEATHER INSOLES



*Exclusive* DURISCO Mildew-Proof  
TREATED CLOTH LINING



*Greatest* CHOICE OF LEATHERS  
AND SOLES



*Three* SEPARATE and DISTINCT  
COMFORT FEATURES

*Plus* THE LARGEST SELECTION OF  
OXFORDS, SHOES and BOOTS



BE SURE YOU HAVE HY-TEST'S LATEST SAFETY SHOE  
CATALOG-MANUAL ON FILE. IF NOT, WRITE TODAY

# WHAT TO WEAR

## WHEN TO WEAR IT



HATS, CAPS  
HELMETS

Sparks	Hot Materials	Heat	Hot Liquids	Moisture	Acids & Alkalis	Slips & Falls	Falling Objects	Flying Particles	Electric Shock	Cuts & Abrasions	Dermatitis	Explosives	Machinery
1	2	3	4	5	6	7	8	9	10	11	12	13	14
X	X	X											
X			X	X	X				X				
X							X	X		X			X
X							X	X	X	X			

Asbestos  
Plastic-Rubber  
Cotton-Wool  
Metal  
Plastic

COATS, APRONS  
WAIST PROTECTION

1	2	3	4	5	6	7	8	9	10	11	12	13	14
X	X	X											
X	X		X					X		X			
			X	X	X				X	X	X	X	
			X	X	X			X	X		X	X	
					X								

Asbestos  
Chrome Leather  
Plastic  
Rubber  
Canvas-Fiber  
Chemical Resistant  
Reflective Fabric

SLEEVES  
WRISTLETS

1	2	3	4	5	6	7	8	9	10	11	12	13	14
X	X	X											
X	X	X						X		X			
			X	X	X						X		
			X	X	X			X		X			
					X								

Asbestos  
Chrome Leather  
Flameproofed Duck  
Plastic  
Rubber  
Chemical Resistant  
Reflective Fabric

GLOVES, MITTENS  
HAND PADS  
FINGER GUARDS

1	2	3	4	5	6	7	8	9	10	11	12	13	14
X	X	X											
X	X		X					X		X			
			X	X	X				X		X		
			X	X	X						X		

Asbestos  
Chrome Leather  
Rubber  
Plastic-Rubber Coated Fabric  
Metal Mesh  
Cotton-Canvas

PANTS, KNEE PADS  
LEGGINGS

1	2	3	4	5	6	7	8	9	10	11	12	13	14
X	X	X											
X	X		X						X		X		
X	X	X						X		X			X
X						X	X		X	X			
			X	X	X				X		X		

Asbestos  
Chrome Leather  
Flameproofed Duck  
Fiber-Metal  
Plastic  
Rubber  
Chemical Resistant  
Reflective Fabric

SHOES, BOOTS

1	2	3	4	5	6	7	8	9	10	11	12	13	14
							X		X				X
			X	X	X	X	X			X			
X	X	X	X										
			X	X	X				X	X			
													X

Steel Toe Caps  
Non-Skid Shoes  
Wooden Soles  
Chrome Leather  
Rubber  
Conductive Rubber





**THE WHEELER FIRE BLANKET CASE**  
New design gives easy access to fire rescue blanket. Door opens out and down with never a hitch. Slanted bottom rolls blanket out into arms for immediate use. All steel construction. Features wall mounting brackets. Attractive green finish with red pull handle. Wheeler blankets can be had in asbestos, aluminized asbestos, flameproof duck, jean cloth, neoprene fibreglas, and 100% wool.



**NEW WIRE CLOTH ARM PROTECTOR**  
Wheeler's latest protective item in our expanding line. New smart design features ventilated wire cloth construction for coolness. Rounded, tubular plastic binding keeps protector from scratching the arms. Simple lock slide straps permit full adjustment, makes the protector easy to put on. Wire cloth available in monel or electro-galvanized steel.



**WHEELER FIRE GLOVES**  
Furnished as a part of the FIRE KING, these gloves are available as extras, or for other fire rescue work, etc. Aluminized asbestos, 14" long, fully lined and reinforced in the palm with asbestos. Insulated for full comfort. Adjustable slide strap on gauntlet gives good seal. Field tested, well accepted. Offer long and satisfactory wear and protection.



## ANNOUNCING THE NEW

**FIRE KING**  
Design patented and trademark registered  
**WITH AIR-PAK**

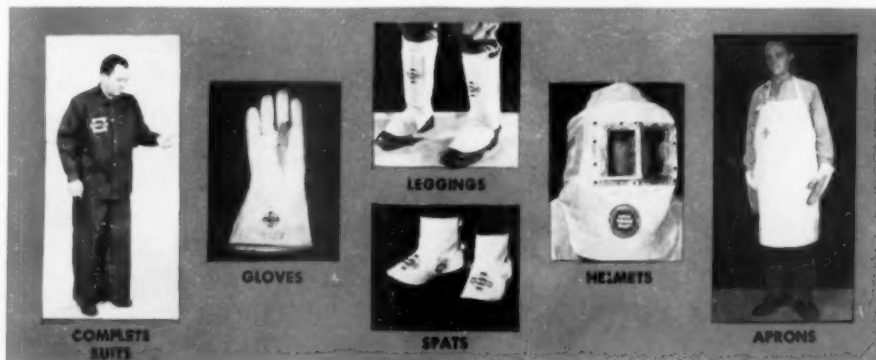
by **Wheeler**

**Helps you avoid the most disastrous consequences of fire\***

The new Wheeler FIRE KING! Far superior to any other rescue equipment, the FIRE KING utilizes light aluminized asbestos for maximum heat reflection and mobility. The efficient Scott Air Pak breathing unit, provides cool air (not oxygen) on demand. The FIRE KING ready for use in seconds . . . easy to use . . . and fits all average size men (5'8" to 6'2"). Cylinder capacity provides for 15 minutes constant work inside the suit—at extreme exertion. Bullard hard hat built in for added protection.

And the cost? Well within the budget of any fire services or institutions. Don't be without this valuable form of fire insurance for another day. Order from your distributor or write direct. DO IT NOW!

**\*6,300 human lives lost through fire in 1954 - countless horses and livestock—millions in property.**



**Wheeler**

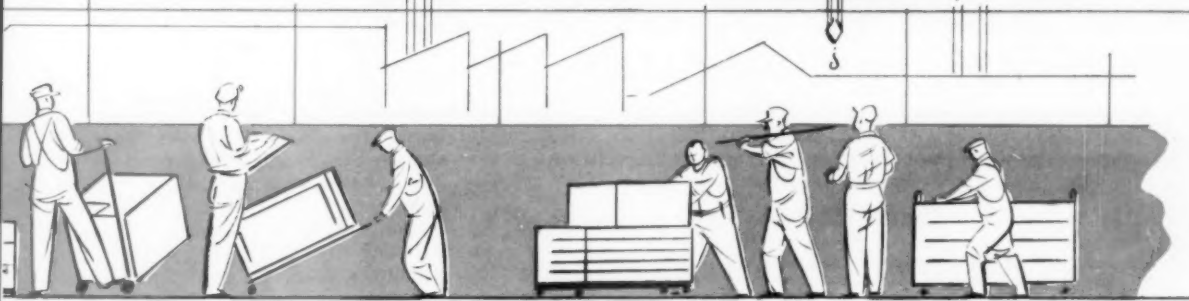
**PROTECTIVE APPAREL, INC.**  
226 WEST HURON STREET • CHICAGO 10, ILLINOIS  
Write for our new Catalog No. G98

# SIDELINED.



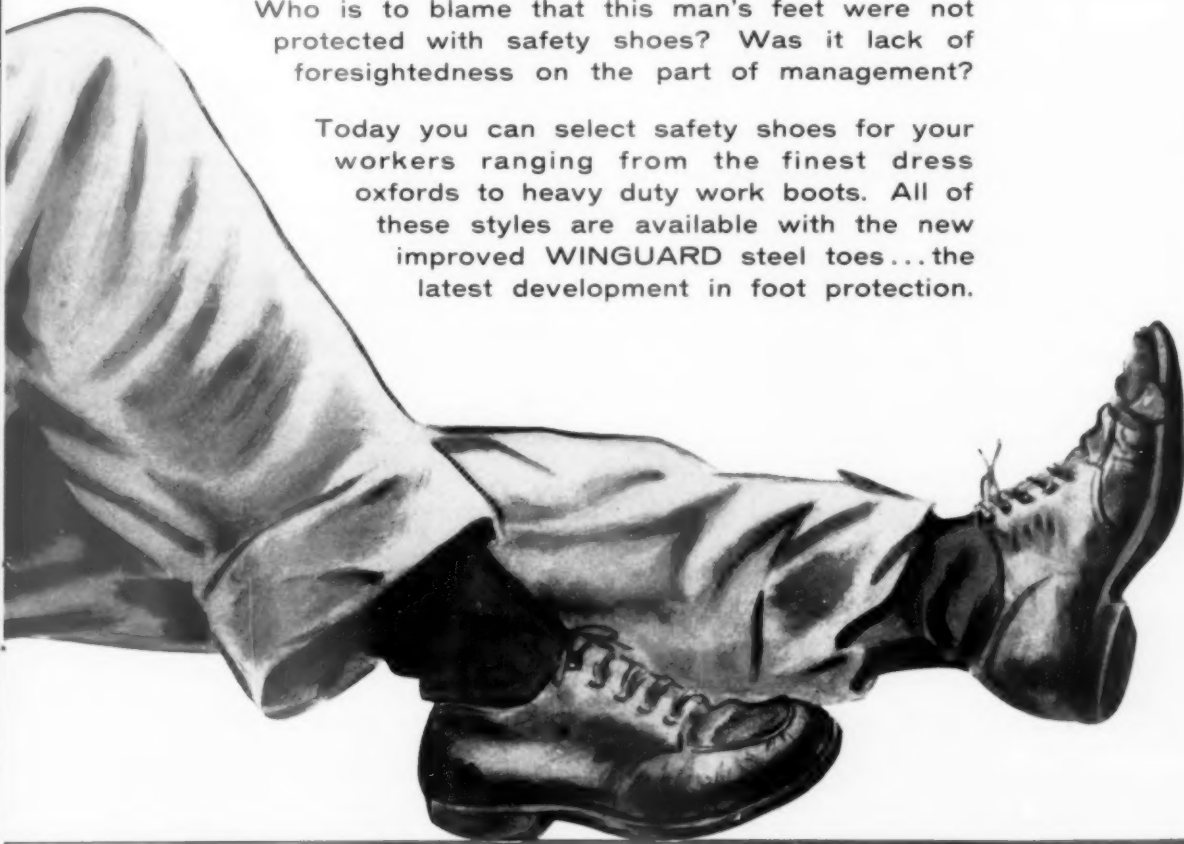
SEE US AT BOOTH 5  
26TH ANNUAL SAFETY CONVENTION AND EXPOSITION  
April 16 thru 20th 1956 • Hotel Statler, New York

# ... who's to blame ?



Just a split-second crash and a valuable worker is sidelined for days to come. So needless! A safety steel toe would have entirely prevented this foot injury... saved suffering and kept the worker on his job. Who is to blame that this man's feet were not protected with safety shoes? Was it lack of foresightedness on the part of management?

Today you can select safety shoes for your workers ranging from the finest dress oxfords to heavy duty work boots. All of these styles are available with the new improved WINGUARD steel toes...the latest development in foot protection.



## Safety Box Toe Company

812 STATLER BUILDING • BOSTON

## PLASTICS FOR EVERY PURPOSE

### COMMON PLASTICS — THEIR PROPERTIES AND USES

- ACRYLICS**—Optical clarity, shatter resistance, weather resistance, machinability, wide color range.  
**Uses**—Goggles, face shields, aircraft turrets, auto tail lights, signs, brush backs. Dynel, Acrilan, Orlon textiles for work clothing.
- ALKYDS AND ROSIN MODIFICATIONS**—Good electrical insulation, heat resistance, dimensional stability, fast curing.  
**Uses**—Paints, ignition parts, magneto rotors, linoleum surfacings.
- AMINOS (Urea and Melamine)**—Good electrical insulation, resistant to organic solvents, unlimited color range.  
**Uses**—Buttons, dishes, laminated table tops, housings for kitchen appliances.
- CELLULOSE PLASTIC MATERIALS**—Toughness, high impact strength, good electrical insulation, ease of fabrication, lustrous finish.  
**Uses**—Frames for eyeglasses, irrigation pipe, display packaging, rayon and acetate textiles.
- COUMARONE—INDENE AND PETROLEUM RESINS**—Resistance to water and caustic cleaners, compatibility with compounding ingredients, glass.  
**Uses**—Asphalt floor tiles, waterproof coatings, aluminum paints, printing inks.
- EPOXIES**—Excellent adhesion, resistance to chemicals and heat, can be cured at room temperatures.  
**Uses**—Adhesives, surface coatings, transformer and motor laminates, printed circuit backing.
- FLUOROCARBONS**—Extreme resistance to solvents and corrosive agents, high impact strength, wide temperature range.  
**Uses**—Chemical tubing, high temperature insulation, pump diaphragms.
- NYLON**—Good strength and toughness over wide temperature range, wear resistance, self-lubricating.  
**Uses**—Gears, rope, brush bristles, slide fasteners, combs, nylon textile.
- PHENOLIC and other tar acid resins**—Hard and rigid, good electrical insulation, low water absorption, good temperature range.  
**Uses**—Protective hats, goggle frames, grinding wheels, plywood, telephone handsets, radio-TV cabinets, shell molding, dials.
- POLYETHYLENE**—Inert to solvents, flexible and tough over wide temperature range, non-toxic, odorless, tasteless.  
**Uses**—Coaxial cables, semi-rigid kitchenware, squeezable bottles, packaging.
- POLYESTER RESINS**—Weather resistant, strong, formable with low pressure, compatible with many fillers.  
**Uses**—Reinforced plastics for auto bodies, boats, translucent panels, Dacron textiles.
- SILICONES**—Extreme heat resistance, good dielectric properties over wide frequency range, low water absorption.  
**Uses**—Insulation for generator coils, circuit breakers, waterproof coatings, auto polishes.
- STYRENE RESINS**—Lightest of commercial plastics, excellent moldability, tasteless, odorless, unlimited color range.  
**Uses**—Lighting fixtures, wall tiles, refrigerator parts, kitchen ware, toys and novelties.
- VINYL RESINS**—Tough and strong, excellent electrical insulation, resistance to chemicals, oil and weathering.  
**Uses**—Floor tile, protective garments for a wide range of exposures, metal and fabric coatings, rainwear, pipe and pipe fittings, valves, electrical insulation, machine and structural parts.

**Note:** Data presented in this table were obtained largely from The B. F. Goodrich Company and Bakelite Corp. The number of applications of these plastic materials could, of course, be expanded considerably.

**MODERN LIVING** and many industrial processes have been revolutionized by the introduction of an enormous variety of moldable synthetic materials described as "plastics." Many of these have important uses in protecting the worker against accidental injury and occupational diseases.

Plastics have a wide range of characteristics. They may be transparent, translucent or opaque. They can provide tough, pliable films or hard, shatter-resisting masses. For years they have been used for protection against the hazards of falling and flying objects, corrosive chemicals, dusts, gases, vapors, and other injurious agents.

Transparent plastic with good optical qualities is used for goggles and face shields. It can be used for corrective as well as plano goggles.

One reason for the wide use of plastics is their resistance to deteriorating agents. From hundreds of compounds, it is possible to obtain a suitable one for a particular purpose.

Most natural materials offer only limited resistance. Rubber, for example, while an excellent impermeable material for many uses, is affected by oil, sunlight, heat, and some acids. When worn next to the skin for long periods it may cause irritation.

Some untreated fabrics, like cotton and linen, are flammable and readily affected by acids.

A plastic to meet any specific purpose can usually be compounded. Compounds can be made impervious to oils, acids and most organic solvents. Some are shatter resistant, non-conductive of electricity, and heat and cold proof. It is often possible to combine many of these properties in one compound.

Some plastics are non-toxic, odorless, and tasteless and are suitable containers for food products. They can be molded to very close tolerances, an important factor in economical production. Most of them can be produced in a wide range of colors.

Articles of safety equipment in which plastics are used include:

- Goggles and face shields
- Hard hats
- Respirators, gas and dust masks
- Garments of plastic film or coated fabric
- Containers for first aid kits
- Instruments for the dispensary

A list of the more common types of plastic materials with their properties and uses will be found in the accompanying table.



# W. H. SALISBURY & CO.

MORGAN AT KINZIE STREETS

★ EST. 1855 ★

CHICAGO 22, ILLINOIS

MANUFACTURERS OF RUBBER PROTECTIVE EQUIPMENT  
FOR LINEMEN AND OTHER HIGH VOLTAGE WORKERS

## INTERLOCKING LINE HOSE



Completely surrounds the wire with a thick wall of rubber having high dielectric strength. Locks itself in place but is easy to apply or remove.

Sizes:  $\frac{5}{8}$ "", 1", 1 $\frac{1}{4}$ ", 1 $\frac{1}{2}$ " inside diameter.

Lengths: 3', 4 $\frac{1}{2}$ ', 6'.

## RUBBER INSULATOR HOODS



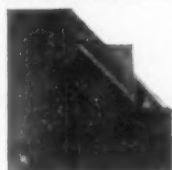
Used in conjunction with Line Hose to cover conductors as they pass over insulators. Inward extending flanges prevent accidental dislodgement. Compact construction. Convenient to handle.

## CONNECTOR-END LINE HOSE



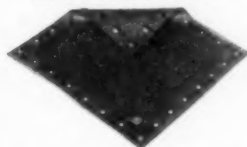
Standard Line Hose with built-on connector-end for joining to additional lengths or for covering enlarged wire taps, leads on stud type transformers, etc. Sizes same as standard line hose.

## LINEMEN'S RUBBER BLANKETS



Indispensable for covering odd shaped equipment. Made of best grade rubber with long-life and high dielectric qualities. Sizes 36"x36" and 36"x27". Also available with "Snap-Button" and eyelets.

## SNAP-BUTTON RUBBER JACKETS



Highest quality small size rubber blanket, 22"x22", equipped with Salisbury hard rubber button fasteners and used to cover dead ends or other similar hazards that require securely fastened protection.

## LINEMEN'S TOOL BAGS



Non-metallic canvas bags properly shaped and constructed for safety in raising heavy tools and supplies to men on poles or other elevated places. Sizes 8"x14" or 12"x16" for tools and 7"x48" for line hose.

## LINEMEN'S RUBBER SLEEVES



Protect the arms and shoulders from accidental contact with "hot" equipment. Held in place by adjustable rubber strap across the shoulders. Made in chromium plated molds to insure high voltage resistance, smooth surface and long life. Regular and extra large sizes.

## NON-SPILLABLE P. B. COMPOUND POTS

Provide a safe and convenient means to carry insulating paint and brush. Being made of semi-hard synthetic rubber, they are non-conducting, non-breakable and are unaffected by the usual P. B. compound used.



## LINEMEN'S GLOVE BAGS



Necessary for glove protection in storage and transportation and useful, when properly labeled, for personal identification. Made of heavy waterproof duck, sturdy and durable. Snap hook and "D" ring attached. Size 8" wide, 15" long.

## LINEMEN'S RUBBER GLOVES

Best grade steam-cured gloves, carefully made to meet all standard specifications. Furnished in curved or straight finger style. Standard gloves are rated at 10,000 volts, 14", 16", 18" lengths, 15,000 or 20,000 volt gloves are available. All sizes and half sizes from 9 to 12.



## RUBBERCUFF PROTECTOR GLOVES

Similar to our standard all-leather protector glove with the addition of a full-length molded rubber cuff. Rubber cuffs do not increase current creepage to the forearm. They prevent costly snags in gauntlets of linemen's rubber gloves which are required to extend beyond ordinary leather protectors. Furnished in several sizes to fit perfectly over rubber gloves.



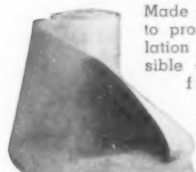
## ALL-LEATHER PROTECTOR GLOVES



Worn over rubber gloves to protect them from injury. Made of specially tanned Grade "A" buffed horsehide and carefully designed to fit perfectly over rubber gloves. Soft and pliable under all conditions. Do not become slippery when wet. Band-top or gauntlet styles. All sizes.

# A DEVICE FOR EVERY ELECTRICAL HAZARD

## SWITCHBOARD MATTING



Made especially to provide insulation from possible ground in front of switchboards or other electrical equipment.

Rated at 40,000 volts and meets the A. S. T. M. specifications. Widths 24", 30", 36", 48". Any length.

## MISCELLANEOUS EQUIPMENT

Static Resisting Rain Coats  
Electric All-Rubber Rain Coats  
Industrial Rubber Rain Coats  
Linemen's Rubber Boots  
Linemen's Rubber Hats  
Cotton Liner Gloves  
Marshall Tagging Device  
Elbow Length Sleeves

Slotted Side Blankets  
All-Rubber Cable Bandages  
Blanket Canisters  
Blanket Clamp Pins  
Linemen's Sleeve Containers  
Cable End Test Caps and Separators

★ SEND FOR CATALOG L-4 ★

## ELECTRICIAN'S INSULATING STOOLS



Designed to provide a safe, low platform for men with hazardous tasks in substations, underground vaults and power plants. Size 18" x 12" x 8" high. Guaranteed.

# *The* **Iron Age** *group*



JAMES H. CHILDS, JR.  
Sales Manager



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Pittsburgh, Pa.



ANDREW MAY  
Chicago, Ill.



CHARLES GARMANN  
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HARVEY CHILDS, JR.  
Sales Promotion Mgr.



E. A. MEYER  
Los Angeles, Calif.



ROBERT H. LOHR  
Detroit, Mich.



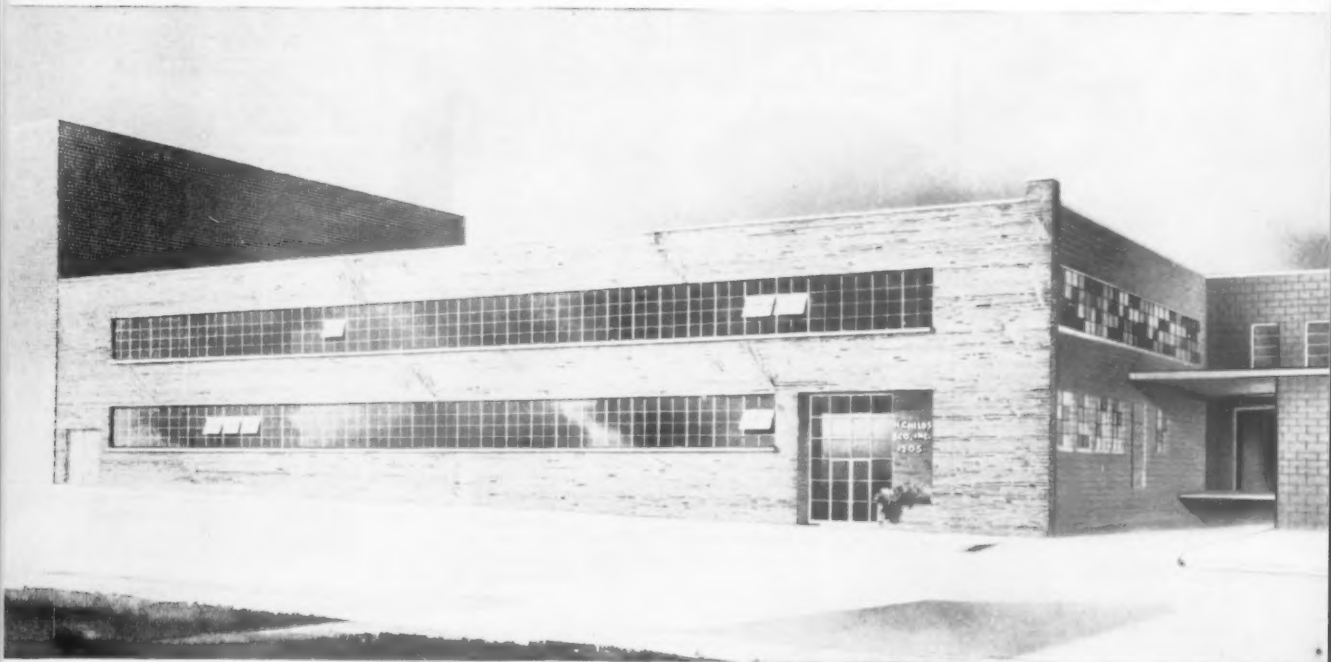
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ALBERT J. BELASCO  
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FRANK DONLEY  
Indianapolis, Ind.



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Gadsden, Ala.



The Safety Shoe For Industrial America

# **Iron Age** *Steel toe*

# of Safety Shoe Specialists

**Thank You** for the business that has made it necessary  
**to increase our warehouse facilities by 50 per cent**

**Better Service For You!** Iron Age has just completed its second expansion program within the past four years. A substantial addition to our warehouse in Pittsburgh has materially increased storage and service facilities. We have also developed an improved system for entering and expediting your orders and installed the latest in mechanized handling and cartoning equipment. Now more than

ever, Iron Age is prepared to furnish you the safety shoes you need, when you need them. All of us in the field and at the factory join in thanking you in industry for your ever-increasing acceptance of Iron Age safety shoes. We pledge a continuance of our policy that service to customers comes first. That's why Iron Age is the fastest growing line of safety shoes.



## Why Iron Age is the value leader

All Iron Age safety shoes are high styled. Their smart lines and sparkling appearance sell safety shoes to workers . . . boost coverage. The Iron Age label stands for top quality. Only the best grades of hides and the finest tannages are used plus nationally advertised outsoles. Why don't you call in your Iron Age representative now for an eye-opening showing. He's as near as your phone—or write us and he will see you. Iron Age Division, H. Childs & Co., Inc., Pittsburgh 12, Pa.

# Safety Shoes



No. 608—one of the more than 40 styles of Iron Age safety shoes.

# STOP *slipping!*

## BILTRITE SAF-T-CEL SOLES



### SQUEE-GEE DESIGN

- ▶ DuPont Neoprene oil proof
- ▶ Lightweight cellular crepe
- ▶ Squee Gee design for extra non-slip traction

*Available in a variety of colors  
and thicknesses with matching heels  
and Neoprene oil proof midsoles*

### SMOOTH OR CRINKLED

- ▶ DuPont Neoprene oil proof
- ▶ Lightweight cellular crepe
- ▶ Resilient, flexible, and long wearing
- ▶ Available for stitched or cement shoes

FROM THE WORLD'S  
LARGEST PRODUCER OF  
SHOE SOLING MATERIALS



## AMERICAN BILTRITE

RUBBER COMPANY

CHELSEA 50, MASS. • SHERBROOKE, QUEBEC, CANADA



# GO *safely!*


## BILTRITE SURESTEP SOLES



**NEOPRENE**  
**OIL-PROOF**  
**BILTRITE**

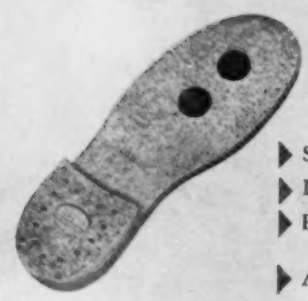
### NEOPRENE COMPOSITION SOLES

- ▶ Resist oil, grease, chemicals and acids
- ▶ Firm, long wearing compound
- ▶ Rugged design with green non-slip plugs
- ▶ Available in black or brown with matching heels



### NEOPRENE CORK SOLES

- ▶ Resist oil, grease, chemicals and acids
- ▶ Resilient, flexible and long wearing
- ▶ Styled for modern industrial use
- ▶ Available in black or brown with matching heels




### FLOATING CORK SOLES

- ▶ So light they float on water
- ▶ Insulate against heat, cold and shock
- ▶ Resist abrasion from gravel, metal filings and other occupational hazards
- ▶ Available in silver, brown, black or red with matching heels



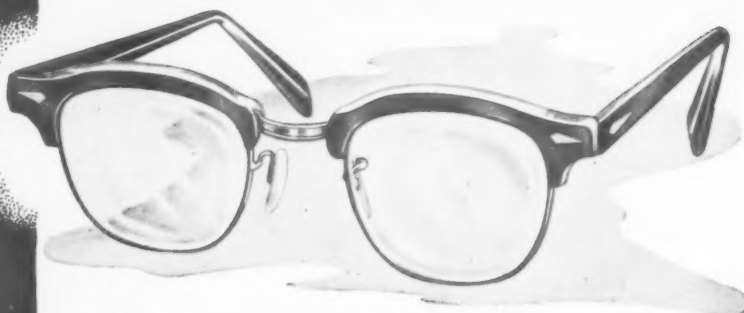
**BILTRITE**  
HEELS AND SOLES



FROM THE WORLD'S LARGEST PRODUCER  
OF SHOE SOLING MATERIALS

**AMERICAN BILTRITE**  
RUBBER COMPANY  
CHELSEA 50, MASS. • SHERBROOKE, QUEBEC, CANADA

# Look Better SAFELY... with the NEW KIMBALL Better Looking Safety Spectacle



Designed for more attractive appearance while retaining the maximum degree of protection the new KIMBALL safety spectacle with strong butyrate frame offers lightweight, comfortable eye protection from most industrial hazards. The improved lens shape makes the new KIMBALL spectacles complement normal facial contour. Available with plain or prescription ground lenses. The sturdy frame will withstand rough industrial usage and the moulded plastic trim retains proper curvature permanently.

Available in lens sizes of 44, 46 and 48 MM.  
Nose bridges come in 18, 20, 22, 24 and 26MM widths.  
The KIMBALL catalog No. is: MA-1-A  
One more KIMBALL development for YOUR safety.

## OTHER KIMBALL SAFETY PRODUCTS...

**EYE PROTECTION:** Spectacle Goggles, Welding Goggles, Composition Goggles, Sideshields.

**HAND PROTECTION:** GLOVES: Welder's, Asbestos, Steel Stitched. MIT-TENS: Welder's Asbestos, Steel Stitched.

**BODY PROTECTION:** CLOTHING: Wool, Flame-proofed Cotton. LEGGINGS and SPATS: Leather, Asbestos, Flameproofed Cotton. APRONS: Leather, Asbestos, Flameproofed Cotton.



# Kimball SAFETY PRODUCTS COMPANY

9310 Wade Park Ave. • Cleveland 6, Ohio

# "SIDE SITE"

## SIDE SHIELDS

These new, easily attached KIMBALL side shields meet eye protection standards, weigh practically nothing, can be readily replaced and cost very little. A trial will convince the most skeptical workman.

Made in clear and green transparent.  
Ask for circular showing all types.



## THE HANDY WAY TO GLARE PROOF PROTECTION

KIM-CLIP is a simply designed spring clip which holds melter's spectacles or plastic protective shields for welding and grinding operations. KIM-CLIP fits all types and makes of spectacles and can be attached in seconds. Adjustable to three definite positions: Up, OUT or Down. Extremely light weight and inexpensive too.

# "KIM CLIP"

# SAFETY BELTS AND HARNESSSES

**SAFETY BELTS** or harnesses with life lines are required:

- For work at high levels
  - In closed spaces where air may be irrespirable
  - Where there is danger of being buried by slides of loose material.
- Occupations in which safety belts are used routinely or occasionally include:

- Structural steel and bridge workers
- Window cleaners
- Public utility linemen
- Cranemen
- Forestry workers
- Miners
- Mechanics
- Painters
- Workers entering tanks, bins and underground passages.

In selecting equipment, two types of use must be considered—normal and emergency.

Normal use involves comparatively light stresses applied during regular work. These stresses rarely exceed the static weight of the wearer.

Emergency use means stopping a man when he falls. This may subject every part of the belt to an impact loading many times the weight of the wearer.

## TYPES OF EQUIPMENT

Types of belt and harness have been developed for various occupations. Most familiar are the line-man's belt and safety strap and the window cleaner's belt.

These belts are built for extra severe use. Both belting material and hardware are the result of much research and experience in the field. Belts are usually serially numbered and dated so that records of age and condition may be kept.

**Materials.** Leather and cotton or linen webbing belts are furnished by most manufacturers.

Well tanned and well oiled leather resists most chemicals but it should not be left in contact with them. Regular cleaning after use is important.

Leather  $\frac{3}{4}$  in. thick and  $1\frac{1}{2}$  in. wide will have an ultimate strength of about 500 pounds. This is ade-

quate for lifting a man out of a tank or bin.

Webbing will stand more heat than leather, and when soaked in water will dry out in its natural condition. Friction buckles can be used with webbing, avoiding the loss of strength at buckle holes.

Belts intended to check a fall demand strength proportionate to the possible distance of fall and weight of body. A 2 in. by  $\frac{1}{4}$  in. leather belt would probably arrest the fall of a window washer at 6 feet. It might break at a 10-foot fall.

For a comfortable margin of safety, a window cleaner's leather belt should be at least 3 in. by  $\frac{1}{4}$  in., or the equivalent.

Special types of webbing are available for certain uses. It can be treated to resist paint and mildew. For the chemical and petroleum industries webbing impregnated with neoprene resists acid conditions.

**Quick release** from a safety belt may be desirable in case of fire. Petroleum workers, for instance, use belts with a quick release buckle which can be disengaged instantly by a single motion of the hand.

Belts for some occupations contain loops and pockets for light tools.



Seat belts are rapidly becoming standard equipment in company cars. (Northern Illinois Gas Co.)

For many occupations a lighter belt will provide ample protection against falls. These may be of the simple body type or the harness type. Both have dees to which a life line is attached. The harness type distributes the shock over the shoulders, back and waist instead of concentrating it at the waist.

**Body harness** with life line attached worn by workers in certain locations expedites their rescue if they should be overcome by gas or vapors, buried by falls of loose materials or injured in confined spaces.

Wherever the work requires a supplied-air respirator, harness and life line rather than a belt should also be used.

If long free falls are possible, the harness should be designed to distribute the impact force over the legs and chest as well as the waist.

The longer the free fall, the greater the impact force exerted upon harness and life line. It is therefore advisable to tie off the line as short as movements of the worker will permit.

**Boatswain's chair.** Where a belt must support the entire weight of a man while he works, as in raising and lowering him along the wall of a building, a boatswain's swing chair should be used. In this type of belt, one strap is used as a seat, sometimes with a board to make it more comfortable. Attached to the seat strap at each side is a strap around the waist to prevent him falling out of the seat. The waist strap permits the wearer to stand or sit.

**Collapsible canvas tool buckets** are also needed on some jobs so the worker may have his hands free while climbing. Edge tools should be protected by guards while being carried.

**Shock absorbers** incorporated in harness and lanyards reduce the severity of impact. This decreases both the possibility of injury to the wearer and failure of the equipment.

**Life lines.** For most life lines,  $\frac{3}{4}$  in. manila rope or  $\frac{1}{2}$  in. nylon rope is recommended.

Nylon rope has more stretch than manila which enables it to absorb shock and sudden loads. It has high tensile strength, wet or dry, is tough, flexible, durable, and easy to handle—is resistant to moisture and mildew and can be stored wet.

Steel cables should not be used as life lines where a free fall is possible unless a shock absorber is also

—To page 186

# what's new?



STOCK NO. 1512



*new!*

STOCK NO. 1685

Strictly "front office":  
grain leather wing tip, fully leather-  
lined, with oak leather sole; premium  
quality throughout. A safety shoe  
that goes anywhere.



STOCK NO. 1514

*new!* **SYLFLEX**  
Silicone-tanned leather  
**WATER-REPELLENT SAFETY SHOES**

An ideal leather shoe for yard-gangs, field crews, damp-  
floor departments or wherever shoes are exposed to mois-  
ture. This leather turns water like a duck's back — stays  
soft and pliable as new even after repeated soakings.



*new!*

all-purpose

### SAFETY DRESS OXFORD

STOCK NO. 1507B

Handsome crushed grain leather with Neo-Grip sole that gives outstanding long wear, high non-skid quality along with much lighter weight than regular industrial soles.



# look here!



*new!*

### 8-inch ENGINEER'S FIELD BOOT

STOCK NO. 1915

With Woodsman Heel — companion to Lehigh's popular 10-inch Field Boot No. 1914.

### FREE!

Your employees can order direct from this new, complete catalog poster showing 80 safety shoe styles. Write for a copy.



*new principle*

IN

### ELECTRICALLY-CONDUCTIVE Safety Shoes

STOCK NO. 900 — no conductive "plugs" in sole or heel — entire bottom is conductive rubber that retains full conductivity in service. After 6 months' test at government arsenal this shoe still shows original 10,000-ohm resistance!



# Lehigh

SAFETY SHOE COMPANY

*Emmaus, Pa.*



## WHAT IS A SAFETY SHOE?

It used to be a shoe with a protective toe

Now it is a shoe with a **NEOPRENE SOLE** and a protective toe

**Bearfoot  
SOLES**

A TRUSTED NAME ON SHOE BOTTOMS SINCE 1924

A scientifically engineered soling material has made the soles of safety shoes as important as the protective toes. Neoprene—a synthetic rubber with many remarkable characteristics—has set a new standard of work shoe and safety shoe service and comfort, giving unprecedented wear and protection under the most punishing conditions.

By their very chemical nature, none of the types of Bearfoot Neoprene Soles are subject to the usual deterioration from contact with sunlight, oxygen, oils, greases, most acids and industrial chemicals. Besides the safety factor involved, this characteristic results in remarkably long service life for these soles in fields where rubber or composition soles deteriorate rapidly.

All Bearfoot Neoprene Soles provide excellent insulation for the foot against temperature extremes. In addition to this important protection for the wearer, these soles do not break down under heat, again giving an indefinitely long service life in foundries, road-building and roofing work and other industries where high temperatures destroy shoe bottoms quickly.

All types of Bearfoot Neoprene Soles give phenomenal wear. Neoprene Type "S"—a DuPont development fabricated originally into a shoe sole by Bearfoot—has a unique resistance to abrasion and outwears any other soling material of any kind known to us. Also, through its high density and toughness, Type "S" Neoprene is highly resistant to cutting, giving extra protection and longer wear in industries where sharp grit and hot or cold metal chips cut ordinary soles to ribbons. Other types of Bearfoot Neoprene Soles are "micro-cellular" in construction, using different forms of Neoprene and containing countless perfect little nitrogen-filled "bubbles" to make a thicker, lighter sole

for soft, cushiony comfort. These soles outwear any other micro-cellular soling material known to us.

All types of Bearfoot Neoprene Soles offer unusual protection against slipping. Laboratory tests—made on many different flooring surfaces, both dry and coated with water, oil and other substances—show Type "S" Neoprene has a squeegee action and gives maximum traction.

Bearfoot Neoprene Soles are made in four types. On the chart at right are compared both their characteristics and those of conventional work soles also fabricated by The Bearfoot Sole Co., Inc.

# Bearfoot NEOPRENE SOLES



...PROVED THE IDEAL SAFETY SOLES FOR EVERY INDUSTRY



which of these

four soles is best

for your workers?



COMPARISON CHART OF BEARFOOT WORK AND SAFETY SOLES						
RESISTANCE TO	BEARFOOT COMPOSITION WITH CORK	BEARFOOT AIROLITE NUCLEAR SOLE	BEARFOOT NEOPRENE TYPE "S"	BEARFOOT NEOPRENE NITROCREPE	BEARFOOT NEOPRENE AIRCUSHION	BEARFOOT NEOPRENE AIRCUSHION GRIT
WEAR	3	3	1	2	2	2
HEAT DETERIORATION	3	3	1	2	2	2
CUTTING (Metal Chips, Grit, etc.)	3	3	1	2	2	2
SLIPPING	2	4	1	3	2	2
OIL, CAUSTICS, CHEMICALS	4	4	1	Design 3 Nap 2	Design 3 Nap 2	1
INSULATION VALUE (Electrical)	All Bearfoot Neoprene Soles are non-conductive. Neoprene is accepted as a standard for electrical wire insulation and is considered the best material for this purpose.					
INSULATION VALUE (Heat and Cold)						
WEIGHT	3	4	2	1	1	1
CUSHION COMFORT	3	3	4	1	1	1
	3	4	3	1	2	2

## PICK THE RIGHT SOLE

Bearfoot Type "S" Neoprene features longest wear, highest resistance to slippage and to cutting and abrasion by sharp grit and chips. The other three types of Bearfoot Neoprene are micro-cellular soles, featuring light weight, soft floating comfort and massive good looks while still maintaining a very high rating on endurance and safety. All types of Bearfoot Neoprene Soles are fully flexible, are supplied in attractive colors, and maintain their shape and profile edge indefinitely without spreading or deterioration.

KEY: 1= Superior; 2= Excellent;  
3= Good; 4= Fair

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famous brand safety shoes

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MILWAUKEE: 1225 WATER STREET  
C. R. Gage, Manager

ST. LOUIS: 1602 LOCUST STREET  
F. E. Alston, Manager

# HANDS AND ARMS

**FINGERS**, hands and arms are involved in approximately one-third of all reported occupational injuries, to say nothing of a large number of unreported first aid cases. Although the worker returns to the job, there is time spent in treatment and perhaps reduced efficiency for a few hours.

These parts of the body, so essential in performing almost every type of work, are exposed to many cuts, scratches, burns and bruises in the course of a day's work.

Finger movement is necessary for practically all jobs, which makes protection more difficult than for most jobs. For the forearm semi-rigid protectors are often practicable.

Types of protection available in a wide variety of styles and materials, include

- Gloves
- Mittens
- Hand pads
- Arm protectors
- Sleeves
- Protective creams
- Finger guards

Generally, gloves, mittens or hand pads should not be worn around revolving machinery. An exception is buffing and polishing on high speed lathes where parts become too hot to handle with bare hands.

Ordinary cotton work gloves offer some protection for the hands on light jobs but many industrial operations require hand protection of more durable material in a variety of specialized designs.



Hand leathers can be heavier and less flexible than gloves and are often preferred for handling sharp and rough objects.

Some of the common materials are:

**Canvas** is relatively low in price and suitable for light work. It is washable.

**Duck and terry cloth** are used for handling objects which are not too rough, sharp or hot.

"Hot mill" gloves are made from a heavy twisted weave fabric which also gives good service for handling rough objects.

**Leather** is more expensive and more durable for most industrial uses. It offers greater protection against cuts and abrasions.

Chrome leather is used where there is exposure to sparks or molten metal. However, no material of animal or vegetable origin will stand continued excessive heat.

**Metal staples** in gloves, mittens and hand leathers give increased protection when handling sharp or rough objects. Metal-studded gloves should not be worn around electric apparatus.

**Asbestos** is used where hands must be protected against extreme heat, as in steel mills, heat treating plants, welding, galvanizing, glass manufacturing, etc.



Gloves of twisted loop pile fabric on inspectors' hands prevent injured hands and leave no lint or finger prints on enameled surfaces. (Jomac, Inc.)

Asbestos gloves may be obtained unlined or with wool lining for added comfort and protection.

Heat-repelling mittens of aluminum-coated fabric between two layers of asbestos, jersey lined, offer unusual protection against heat. These mittens are reversible.

**Rubber, neoprene and vinyl films** are suitable for chemical laboratories and plants where acids and other corrosives are handled.

Neoprene and vinyl are particularly useful where petroleum products and some organic solvents are handled. Synthetic films vary in their resistance to chemicals and the manufacturer should be consulted about exposures.

Fabrics coated with rubber, neo-



Practically every item of personal protective equipment, from a work glove to a hose mask, is shown here. Such displays are helpful training aids.

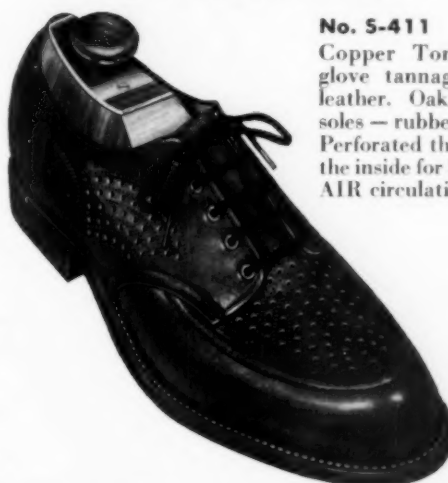


# NEW! FOR SUMMER



**No. S-409**

Antique Copper Tone. Soft glove tannage upper leather. Oak leather soles—rubber heels. Laced vamp construction gives maximum flexibility and comfort.



**No. S-411**

Copper Tone. Soft glove tannage upper leather. Oak leather soles—rubber heels. Perforated through to the inside for SUPER-AIR circulation.

**4 New Smartly Styled Safety Shoes**  
... WITH THE FAMOUS **RICO** TRADEMARK OF QUALITY

## NEW! for year 'round wear



**No. S-412**

Chestnut Tan. Grained upper leather. Oak leather soles—rubber heels. Fully leather lined. Currently popular black-piped moccasin overlay pattern.



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Company \_\_\_\_\_ Position \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

prene or vinyl are used for light cleaning operations. They offer greater protection against abrasion than uncoated fabric.

When rubber or plastic gloves are worn for long periods, a lightweight cotton liner is desirable. If no liner is available, talcum powder should be shaken into the gloves before wearing.

Rubber, plastic and asbestos gloves should be long enough to come well above the wrists. Gauntlets should be equipped with locking devices to assure a snug fit about the wrists. Sleeves should be kept rolled down, leaving no skin exposed.

**Metal mesh gloves** are used in meat and other cutting. They should fit snugly.

**Linemen's gloves.** Rubber gloves worn by linemen and others engaged in electrical work are of a special type made to exacting specifications. They should be tested regularly and discarded when found worn, cracked or punctured.

For line work, overgloves of leather are worn to protect the rubber against damage.

**Gauntlets** offer some protection to the wrist.

**Lead-rubber gloves** protect the hands against x-rays and the gamma rays of radioactive materials. They are worn by medical, industrial and nuclear technicians. The glove may include a leather outer covering to prevent damage to the lead-impregnated rubber.

**Lead-leather gloves** are also available for radiation exposures.

**Arm protectors** guard the forearm against light blows. The materials, depending on the protection required, include duck, wool, leather, rubber, plastics, and asbestos.

**Finger stalls** may be used where a complete glove is not necessary. These are available in combinations of one or more fingers. Materials used are rubber, leather, plastics, duck, asbestos, and metal mesh.

**Hand pads** are often more satisfactory than gloves for protection from heat, abrasion or splinters. They can be made heavier and less flexible than gloves.

Hand pads are obtainable in leather, asbestos and twisted weave fabric.

## PROTECTIVE CREAMS

Creams are helpful in protecting the skin against many irritants when safety clothing is not practicable.

# Is the Purchasing Agent On Your Team?

**NEXT TO THE** attitude of management and workers toward safety, nothing is more important to accident prevention than the work environment—with all hazards of plant, equipment and materials eliminated to the greatest possible degree.

This fact places an important responsibility on the purchasing agent—an individual with whom the safety director should form a close and harmonious working arrangement.

The purchasing agent, conscious of management's primary goal—low-cost, efficient production—knows that accidents add needlessly and wastefully to production expense, so it is his duty to buy equipment, tools and raw materials with all accident potentials processed or engineered out of them.

This responsibility is not a new concept, by any means. Since the beginning of the organized safety effort, management and safety leadership have sought accident-free supplies in every aspect of production. More than 20 years ago, the National Association of Purchasing Agents issued, from its New York headquarters, a bulletin "to acquaint the purchasing agent with some of the problems involved, so that he may better understand his responsibility."

"It is his duty," the bulletin continues, "to investigate the fitness of materials, devices and apparatus in their relation to fire prevention and protection, and their relative freedom from accident and disease hazards. This information he should develop fully with the engineer, director of safety, medical department and others to see to it that he will

These products are made in water-soluble and water-resistant types, each in several grades for differing exposures.

Water-soluble creams are used for protection against cutting oils, paints, lacquers, varnishes, etc.

Water-resisting applications are used where the cutting oil, cooling lubricant, or other irritant has a water content of more than 10 per cent. These can be removed with soap and warm water.

To be effective, coatings should be renewed frequently. They are not intended for protection against highly corrosive substances.

get a range of bids wide enough to take in that equipment embodying the latest and best safety features.

"It goes without saying that much may be done in connection with the purchase of equipment and machinery and other items to protect the life and health of the ultimate users. This factor should be one of the primary purchase considerations, equally important with price and service. Machines, as a rule, can be and are becoming more and more properly guarded against those accidents of a repetitive nature.

"The purchasing agent should make it his business to inquire of the plant safety inspector as to the nature of accidents which have occurred on any piece of machinery or equipment, which is about to be replaced or ordered. The new requirements should be purchased with a specification to the manufacturer that he shall attempt to submit, together with his quotation, a modified design or a guard which may help to avoid such accidents. The manufacturer, as a rule, is happy to cooperate and develop the safeguard, and frequently without additional cost, because the value of the machine to the user is enhanced.

"It must be borne in mind, however, that the responsibility for discussing the matter with the manufacturer lies with the purchasing agent, for it is the latter's fellow-employees who use the machine, and it is only through this source that the manufacturer of the equipment can become conversant with its safety defects.

"In industrial accident prevention, there are but two factors involved—mechanical equipment and men—and the first approach should be through the mechanical equipment. You would not expect a man to attain ten-thousandths of an inch accuracy with a gauge calibrated only to one-hundredth of an inch. You would buy the ten-thousandths gauge first, then induce the man to acquire the skill to operate that gauge.

"Do exactly the same with your safety problem in connection with your purchasing duties. You must help to make your plant reasonably safe mechanically before you can expect to arouse much enthusiasm for safe practices on the part of your employees."

The plant safety director, who is



## GRA-LITE OFFERS PROOF

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Gra-lite garments . . . originally created in special designs for only the toughest of industrial chemical hazards are currently available in **all production patterns** . . . aprons, coveralls, coats, overalls . . . featuring unique armored seams, high abrasion resistance and extraordinary durability . . . the same qualities that earned it a "trouble-shooter" reputation on extremely hazardous jobs.

Remarkable Gra-lite durability means lower replacement costs. Armored seams give positive protection against seepage. Resistance to laundering chemicals adds still longer life.

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Armoring is a fusing of additional Gra-lite over and through garment seams. It is **not** a coating process but is rather a permanent sealing of all threads and potential seepage points.

### WRITE FOR A TEST SAMPLE

We will be pleased to send you a Gra-lite swatch with specimen armored seam for test purposes. Just write giving the chemicals normally found on-the-job.

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closest to the accident prevention operation, should be consulted on all planning and purchasing that might involve safety in operations, and the safety man should make sure that the purchasing department is continually informed of safety considerations affecting routine purchase of materials and of the standards that should be followed in buying certain types of equipment.

Things the safety director should do to get the cooperation of the purchasing agent might include:

- Give the purchasing agent information on types of accidents, on accident causes, etc., which accidents have resulted from or have been aggravated by failure of equipment or hazardous materials.
- Provide specific information about machines or process hazards that could be eliminated by redesigning.
- Get the assistance of the purchasing agent in investigating accidents which might have

been caused by faulty equipment.

- Invite the purchasing agent to attend safety meetings.

Hazards are sometimes caused by bought items which the purchasing agent regarded as safe, such as:

- Improperly annealed hammer chipped, piece punctured man's eye.
- Imperfections in goggle lens caused eyestrain and headache, leading to fatigue and a number of accidents.
- Sub-standard safety shoe crumpled under moderate impact, caused amputation of worker's toes.
- Wooden tote boxes caused many splinter punctures that would have been avoided by metal boxes.

The modern trend is to design accidents **out** of plants and processes — and the close collaboration of safety directors and purchasing agents will uphold such standards on a continuing basis.

## Recognition of a New Industrial Disease

By N. GILLMOR LONG, M.D.  
and FRED PORTER, M.D.

**NICKEL** carbonyl, cadmium sulfate, metallic mercury vapors, nitromethane toxicity problems would be specific for certain occupations involving a small percentage of workers within these industrial specialties. Study of the toxic effects would find a common denominator of pathological effects involving the lungs, liver or kidneys with secondary skin manifestations. Clinically such "lethal" exposures would show varied symptoms of weakness, undue perspiration, fainting spells, loss of appetite, etc.

The industrial physician has no great difficulty in tracing down industrial causations of individual

cases among large groups of workers engaged in and subject to the same working conditions. It is only when a high percentage of workers become involved when working on a new project or using a new combination of chemicals that a "new" industrial disease is born and immediate plans for solution of the problems instigated.

There will be a number of industrial diseases, with probably similar patterns of systemic involvement, arising from machine radiation, the expanding silicone industry, the nitroparaffins, and new uses for the polyurethanes. Trinitrotoluene liver disease is almost a specific industrial disease. Parathion poisoning, acrylonitrile toxicity, manganese poisoning are all common experiences in the field of industrial medicine.

To list the potentialities of all the

toxicological properties of all chemical compounds being used in industry is impossible as Dr. Wilson of the Goodrich Company wrote several years ago. The more common diseases have been recognized and catalogued both as to treatment as well as prevention. The Beryllium Register at the Massachusetts General Hospital under the guidance of Dr. Hardy is an excellent example of the recognition and attempted control of suspected and proven beryllium cases.

How to recognize that an unusual, uncommon industrial disease exists? Such diseases creep on insidiously in a new industry or a new combination of "old" chemicals. It was only by astute observation over a period of time that silicosis pneumoconiosis was recognized and the problem attacked. The same was true with beryllium and the same will be true of future industrial medical problems.

It is axiomatic that any new combination using a known toxicological agent should be carefully watched over the early months of use. Lead combinations would call for lead blood quantitative testing together with routine reticulocyte counts.

Any new process would call for careful observation as to dust counts, air saturation, check of waste products (disposal of liquid organic wastes is almost a specialty within itself). The personnel department must be on the alert as to absenteeism in all departments, carefully checking as to causative factors underlying extreme fatigue, "colds," etc.

When three or more workers in a single department engaged in a new process or the use of "new" chemical combinations have nearly dovetail complaints to be followed by others — this is a definite indication for the industrial hygienist, the safety engineer and the industrial physician to get busy. It may be nothing more complicated than a chance grouping of two or more hay fever recipients but it could be the start of another beryllium or silicosis problem.

Persistent symptoms relative to skin eruptions, unusual fatigue, vague but persistent abdominal or kidney pains, dyspnea, diarrhea, any regional distress if duplicated by other workers, under the same conditions of exposure, working on a new "product" or on with known toxicological agent, should immediately call for investigation.

Dr. Foulger of du Pont summarized the pertinent criteria to be checked before assuming that one is

—To page 190



# Armortred

## NEOPRENE Cord Soles and Heels

NEW SAFETY and WORK SHOE SOLE BY QUABAUG



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Company.....  
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City..... State.....

## Safety Belts

—From page 175

used, because their rigidity increases the impact load. Metal cables should not be used around electricity.

### CARE OF BELTS

Dust should be brushed off carefully so as not to scratch the belt. A leather belt should then be washed with warm water and saddle soap or castile soap. It should be rinsed in



Regular cleaning with saddle soap and application of neatsfoot oil or other good leather dressing prolongs the life of safety belts.

clean warm water and allowed to dry in room temperature.

Leather belts should be treated with neatsfoot, castor, soybean or a compound oil, not a mineral oil. Leather should never be exposed to excessive heat.

Webbing belts may be washed in soapy water, rinsed and dried by moderate heat. They are not damaged by any temperature up to the boiling point of water. The manufacturer of the belt should be consulted about the dressing.

Belts should be inspected before use by the employees who wear them. Every one to three months they should be carefully inspected by a trained individual.

Leather belts must be watched carefully for cuts or scratches on the skin side of the hide. A deep cut on the skin side warrants condemning the belt.

Fabric belts should not be used if the outer plies are cut or worn through. All belt hardware should be checked and replaced if it shows signs of wear. If the belt is riveted, each rivet should be examined separately.

Life lines should be washed with mild soap and water and dried in circulating air. They should not be exposed to high temperatures. Rope should be kept in open coils and never bent sharply.

## Shoe Merchandising

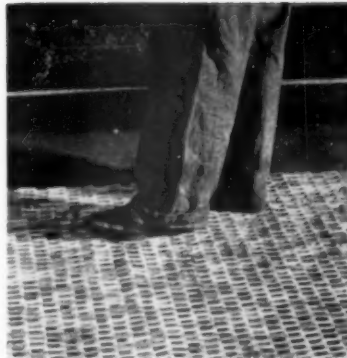
—From page 154

available, but did not want a large stock in the plant.

The next thought was to arrange with an established retail store to honor requisitions given employees for purchases on payroll deduction. This method had drawbacks. No store was conveniently located; some employees lived in small communities to the north and some to the south. Also there was the cost factor. The merchant needs a mark-up to cover his expenses and profit whereas the in-plant store sells shoes at wholesale.

A third method appealed to this plant. A mobile shoe service is operated in this industrial area. It consists of a truck equipped as a shoe store and manned by an experienced fitter who is responsible for all adjustments. A variety of styles and a full range of sizes are carried in the unit. Periodic visits are arranged.

Between visits shoes can be obtained on special order in one day.



Resilient, shock-absorbing mats of several types enable machine operators to work with less fatigue. Damage to dropped tools is also greatly reduced. (Lowenthal Co.)

This service is rendered on a modest mark-up basis and the plant can charge the employee any part of the cost. This plant absorbs the mark-up, making the shoes available at the same price as would be paid at an in-plant store. Payment is made by payroll deduction.

Such service is available in many communities or from near-by cities.

## To Avoid Foot Troubles

1. Broaden pre-employment physical examinations to include a good look at the prospective employee's feet.

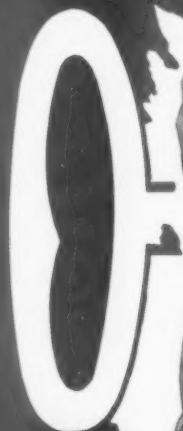
This doesn't mean turning down candidates because of bad feet. It means simply reappraising the individual work situation and advising the candidate to see a foot specialist if necessary.

2. Broaden group insurance programs to include medical visits which will allow the employee to receive foot treatment.

3. For larger companies, add a chiropodist to the medical staff; for smaller companies, insist that the doctor who does the physical examinations call attention to foot troubles and recommend treatment.

4. Plant medical directors should urge proper footwear for employees. A safety shoe program would benefit both employee and company. Spike heels and work shoes that should have been thrown away months ago don't belong in the safe plant.

CANVAS — LEATHER  
NYLON — FIBRE  
SAFETY EQUIPMENT



R. H. BUHRKE CO.  
CHICAGO 7, ILL.

## Wire From Washington

—From page 10

ments to its regulations concerning the transportation of certain explosives and flammable products.

S. 3097 (Langer and six other senators) would provide for certain inspections and investigations in metallic and non-metallic mines and quarries (excluding coal and lignite mines) for the purpose of obtaining information relative to health and safety conditions, accidents and occupational diseases.

S. J. Res. 130 (Lehman and two other senators) would grant Congressional consent to New York, New Jersey and Connecticut to authorize the Interstate Sanitation Commission, which was established by compact to deal with water pollution in the New York harbor, to make certain studies of smoke and air pollution in the New York City area.

**Aviation.** The President's budget message noted that rapid technical development had "produced serious traffic congestion," and that flights

have been delayed or cancelled "to maintain our high standards of safety." Therefore, as a step toward meeting the problem, the President recommended new authorization for \$40 million to install greatly improved air navigation and traffic control facilities. He also promised that he would "shortly initiate a comprehensive study of the nation's long-range needs for aviation facilities."

The Bureau of the Budget released a report of an eight-man Aviation Facilities Study Group appointed on May 4, 1955, which likewise urged a study of the character mentioned by the President. This group said that "risks of mid-air collisions have already reached critical proportions" and warned that the "collision hazard is becoming greater." The report says that on an average day there are four near-collisions in the air between airliners. The suggestion for further study met some Congressional opposition, on the basis that "action, not studies" was needed.

Safety also figured in the controversy over the dismissal of Civil Aeronautics Administrator Lee. As

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Everywhere

All FLEX-SAF linemen gloves and FLEX-FIT linemen sleeves are made with meticulous care by the dipping process from highest quality pure rubber, and all exceed ASTM requirements.



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New 18" x 22" poster instructs Linemen in proper use and care of gloves and sleeves and how to inspect them for damage.

## CHARLESTON RUBBER COMPANY

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a result of such dismissal, S. 2818 (Monroney) was introduced to take the CAA out of the Department of Commerce and make it an independent agency. Undersecretary of Commerce Rothschild, testifying in opposition to this proposal, denied the charge that the Commerce Department had "pinched pennies at the expense of air safety." He said that taking the CAA out of the Department of Commerce would, among other things, jeopardize safety.

The Department of Commerce announced the expansion of a new Flying Weather Broadcast Service, which provides continuous broadcast of aviation weather and notices to airmen, especially useful for private and business pilots.

**Home Safety.** Extensive hearings have been held by a House Subcommittee on eight bills authorizing the Food and Drug Administration to test chemical additives to food. H.R. 8599 (Priest) would amend the Food, Drug & Cosmetic Act to prohibit the interstate shipment of unsound, unhealthy, diseased, unwholesome, or adulterated poultry or poultry products.

The Federal Trade Commission promulgated Trade Practice Rules for the frozen food industry, which include a condemnation of improper temperature and refrigeration control as "a menace to the public health." The Federal Trade Commission has also issued several cease and desist orders to prevent the importation and sale of fabrics banned by the Flammable Fabrics Act.

**Marine Safety.** The House Merchant Marine and Fisheries Committee held hearings on H.R. 7952 (Ray) and H.R. 8267 (Lanford), which would regulate the inspection and certification of certain vessels carrying six or more passengers for hire. In the course of these hearings, testimony was heard about a recent accident involving an allegedly unseaworthy vessel.

**Fire.** S. 3032 (Duff, and nine other senators) would grant Congressional consent to the Middle Atlantic Interstate Forest Fire Protection Compact, intended to promote effective prevention and control of forest fires in the states of Delaware, Maryland, New Jersey, Pennsylvania, Virginia, and West Virginia.



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Industrial Web Safety Harness



Adjustable and Standard Climbers Steel or Aluminum



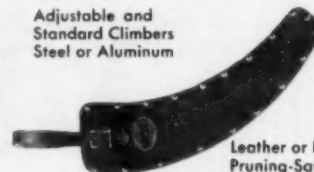
Electricians' Tool Belt with or without Holster



Leather Safety Straps 24 Styles



Shifting "D" Safety Tool Belt with Built-in Nylon Safety Feature



Leather or Fibre Pruning-Saw Guard



Double Axe Guard Fibre, Wood Bottom

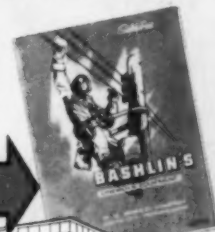


Canvas Tool Bucket—Non Metallic Fibre Top—Leather Bottom



Linemen's Leather Tool Holsters

Write for Catalog '56



**W. M. BASHLIN COMPANY**  
GROVE CITY 3, PA.



## A New Disease

—From page 184

dealing with a true problem. Was the worker actually exposed to the chemical in question? If so, what was the concentration and length of time of exposure? What was the degree of physical activity during time of exposure? Condition of health at time of exposure with pos-

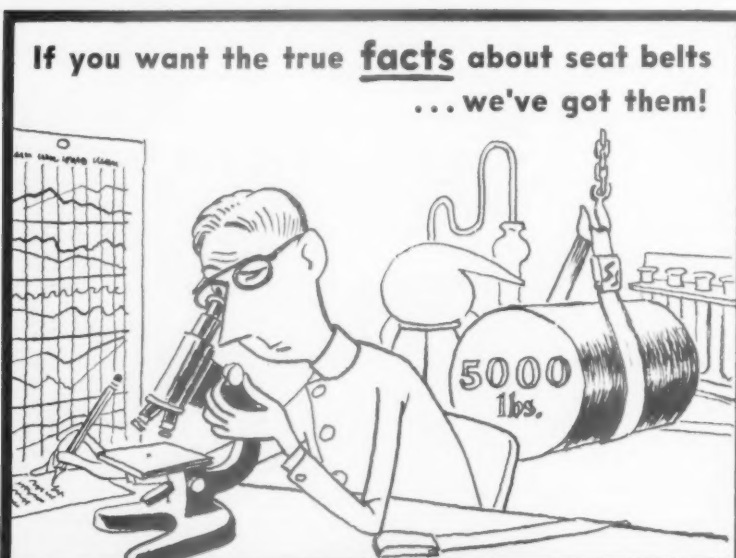
sible clinical history of abnormal function, abnormal kidney, lung, cardiovascular or liver function? Was there a suggestive duplication in the history and physical findings of fellow workers under same conditions and with the same complaints?

This article was written as a reminder that the serious question of industrial occupational disease may come on insidiously unrecognized.

This has been the experience of nearly all the major industrial diseases. It took considerable effort on the part of Dr. Gardner of Saranac Lake fame to convince the trade that silicosis was a direct threat to life. In the avalanche of suits that followed, many small granite firms were snuffed out of existence. All firms dealing with dusty occupations or using known toxicological combinations should be on the alert at all times.

Small companies, unfortunately, do not enjoy the maximum protection afforded by a trained team of safety engineers and industrial hygienists that are part of the protective system of the larger basic industries. The Wall Street Journal told of the excellent work being done in Casablanca, Africa, where the rise of industrialization has utilized the services of such a team of "preventive medicine" for the first time in that area.

Perhaps the National Safety Council may see fit to adopt a National Register for some of our newer chemical problems, control of which will mean the savings of human disability as well as expenditure of money. It will only be by full cooperation of management, labor, and safety forces that we can continue progress in this startling world of atomic reactors and progressive chemical sciences.



We feel certain that when Safety Directors buy seat belts, they want all the facts . . . not just unsubstantiated claims. That's why the Rose Manufacturing Company has assumed the leadership in compiling the most comprehensive analysis and comparison of belts and components available. Here, for example, are some of the facts we've uncovered:

- .... Many nylon-rayon belts—(usually 90% rayon, 10% nylon)—are being passed off as pure nylon.
- .... There is as much as 100% variance in the tensile strength of belts of well-known manufacturers.
- .... In a recent series of tests of cotton aviation belts, belts used from 2 to 3 years failed at 200 to 700 lbs. line pull.
- .... "100% nylon" webbing retains its safety many years longer than any other webbing.

These are just a few of the many FACTS, substantiated by actual laboratory tests, which are contained in our report. Write for your FREE copy today!

### Here Are Some Product Facts About Safe-Hi

- ... Average strength of complete assembly exceeds 5000 lbs., body block pull.
- ... Most economical belt on the market per years of use with safety. (Approx. cost per year —\$1.00)
- ... All nylon webbing. Minimum breaking strength 5400 lbs. Treated for enormous endurance.
- ... Metal to metal buckle. Safeguards against accidental release.

Please send me the **FACTS** about auto seat belts

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ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

COMPANY \_\_\_\_\_

ROSE MFG CO.

**Safe-Hi**  
DENVER

2700 W. Barbary Pl.  
Denver 4, Colo.

## Getting the Wear Out of Safety Shoes

Keeping shoes clean adds to their life as well as to their appearance. After wearing, muddy shoes should be cleaned with mild soap suds and wiped dry if possible.

Shoes of elk, retan or similar leather can be preserved and made more water repellent by treating with animal or vegetable oils or shoe compounds once a week or oftener. Shoes of smooth grain upper leather should be cleaned with saddle soap and polished with a high-grade shoe polish.

When shoes become wet from perspiration or from outside moisture, they should be dried away from any heat. When drying, shoes should be placed on ventilated shoe trees to keep their shape. If shoe trees are not available, the shoes could be stuffed with crumpled newspaper. After extreme wetting, dried shoes should be treated with castor oil or neat's-foot oil.

Leather can be made water repellent by use of silicone dressing.

# Falls Have Many Causes

IN INDUSTRY falls occur in many places and from many causes. They are generally classified as:

- Falls on level surfaces.
- Falls from one level to another.
- One survey showed that of every 100 falls of persons:
  - 31 occur on level surfaces.
  - 15 involve use of ladders.
  - 12 take place on stairways.
  - 11 on or from scaffolds.
  - 6 into openings of various kinds.
  - 25 from miscellaneous causes.

Conditions and practices causing most falls include:

## Physical conditions

- Floors—uneven, in poor condition, excessively smooth.
- Stairs with worn or broken treads, irregular or curving treads.
- Floor openings—unguarded or with loose coverings.
- Scaffolds and platforms with loose or defective planks.
- Ladders with defective rungs, rails or steps.
- Lack of good lighting.
- Poor plant layout, overcrowding.

## Poor Housekeeping

- Grease, oil or water on floors or steps.
- Loose or fixed objects on floors or steps.
- Loose material that may shift underfoot.
- Icy walks and steps.

## Personal causes

- Carrying too heavy or bulky loads.
- Failure to use personal protective equipment (e.g. safety belts).
- Physical impairment.
- Haste, inattention, chance-taking, horseplay.

Within limitations, fall prevention can be built into the plant. Many hazards can be avoided if plans for new construction and major alteration projects are reviewed by the safety department. This gives opportunities for recommending non-skid floors and general safety features in stairs, elevators, platforms, fixed ladders, ramps and other locations. With permanent installations designed for safety, more attention can be given to maintenance and training.

Work above the ground level is not without hazard even when normal precautions are taken, but the risk can be minimized when ladders are the right type for the job, well maintained and properly used. Ladders constructed to conform to the ASA code are reliable. Then set up

a maintenance program to keep them in safe condition.

Scaffolds are temporary structures and sometimes leave something to be desired in materials and workmanship, particularly for small jobs. When used frequently, portable sectional metal scaffolds can be a good investment.

There are several types of flooring with good anti-slip qualities.

It is satisfactory for platforms, walkways and ramps, and around machinery.

In many places non-skid coatings may be used. Pressure sensitive fabric with abrasive surface also has numerous uses. It is easy to apply and wears well.

For a sure footing, footwear is important. It should be kept in good repair. Soles and heels of rubber or neoprene with cord or granules of cork incorporated will grip most surfaces.

—Turn page



## Du Pont PRO-TEK® keeps irritants from reaching the skin!

You save production time when you keep irritants away from workers' hands with Du Pont PRO-TEK. It's the heavy-duty protective cream that acts like invisible work gloves. PRO-TEK goes on hands and arms before work and shields the skin from grease, grime, paint and insoluble cutting oils. Afterward, PRO-TEK simply washes off—taking all the irritating grime along with it! Saves job time, maintains efficiency, boosts morale. Order PRO-TEK from your supplier, or write E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Delaware.



Better Things for Better Living  
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"Invisible gloves"  
guard hands against:

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## LOW COST-PORTABLE SAFETY WELDING SHIELD

Here is lightweight portable welding shield that is flexible for shaping around even the most out-of-way welding areas, and yet is ruggedly constructed for long hard use.

## SPA-FLA PROTECTIVE PRODUCTS

Welding Curtains, for all booth and production welding protection.

## PROTECTIVE COVERS

Asbestos Heat Curtains, fabricated into fire blankets, covers, curtains, etc.

SPA-FLA with RAY-TEX the new Industrial Protective Aluminum Coated Fabric.



Box 165-N, Dubuque, Iowa



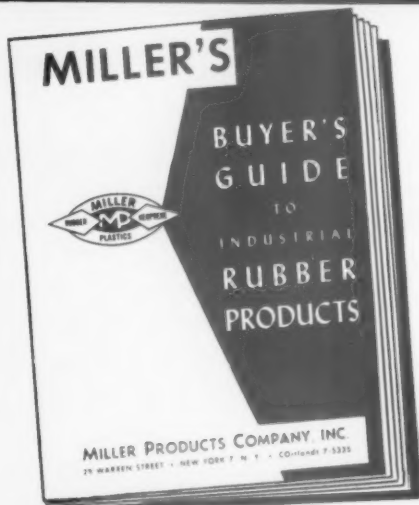
## ON THE JOB-PORTABLE WELDING PROTECTION

### SPA-FLA SHIELD AS PART OF YOUR WELDING CART

The last word in welding and safety and portability is SPA-FLA as part of your on-the-job maintenance welding cart. SPA-FLA is easily carried from job to job, and should be the safety habit of every maintenance welder.



# New! A BUYING GUIDE



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AND  
SAFETY  
EQUIPMENT

AND  
IT'S  
FREE

56 pages full of  
suggestions and ideas in  
this guide... write for your copy today



**MILLER PRODUCTS CO., INC.**  
Dept. S • 29 Warren St. • New York 7, N. Y.

Good housekeeping is one of the most important preventives of falls. In meat packing plants and some other food processing industries cleaning up the floors must go on constantly or neither the floor surface or any type of anti-slip soles and heels will be effective.

Where conditions warrant, use absorbents to remove oil and grease from floors, particularly in machine shops and garages.

Where floors must be waxed for protection or appearance, there are coatings with high resistance to slipping.

## Protection for Electrical Workers

Special tools and protective equipment have been developed for linemen and generating station employees. Operating conditions vary but certain items are standard.

Tools used near energized equipment should be designed for the job and insulated to minimize the danger of short circuits in the equipment and shock to the operator. Insulation on tools alone, however, is not adequate protection near high voltages.

Items in common use include:

- Linemen's rubber gloves
- Leather protector gloves
- Rubber line hose and blankets
- Linemen's belts and safety straps
- Climbers
- Rubber coats
- Tool pouches
- Tool buckets
- Fuse pullers
- Switch sticks
- Insulated stools
- Switchboard mats

Protective hats of insulating plastic or fiber glass are becoming standard equipment for linemen.

Regular and thorough inspections should be provided for all protective equipment. Any article found defective should be replaced immediately.

Brooms, brushes and other cleaning equipment used around energized equipment should be free from metal. Insulating handles of tools should be kept clean and dry and only non-conducting preservatives used on them.

Metal ladders should not be used around electrical equipment.

In emergencies where areas are wet, wood platforms, insulated stools or rubber boots should be worn by maintenance workers.

See Specifications for Rubber Protective Equipment for Electrical Workers, ASA Series J6.



# HOOD makes all types of WORK GLOVES



**7705**  
**NEOPRENE COATED**  
Heavy duty coated  
without loss of  
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Standard weight,  
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**NEOPRENE COATED**  
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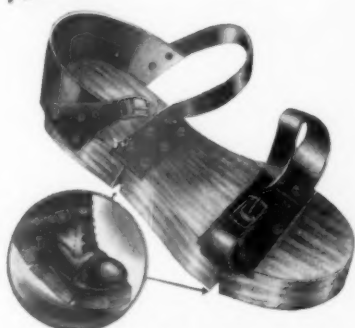
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glove for **EACH** job.

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for **BROKEN FOOT BONES**  
**CRUSHED TOES • SWOLLEN FEET**  
Wood **SOLE** acts as splint.  
Also available without guard.

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Wooden  
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# the odds are 99 to 1 you'll want a *Miller* BAK-SAVER



A new concept in safety belts for linemen—the Miller BAK-SAVER No. 99 with contoured wide-width back span for complete comfort, safety and support. The BAK-SAVER is made of strong, lightweight leather, perforated for ventilation and designed for greater freedom.

## Miller BACKING THE LINEMAN TO THE LIMIT

All Miller Safety Equipment fully described and illustrated in colorful, new catalog. Send today for yours, and ask to see and try the new Miller Bak-Saver Belt No. 99!

**THIS IS YOUR LIFE ...  
DON'T RISK IT ... MILLER IT!**

*Miller* EQUIPMENT COMPANY, INC. • FRANKLIN, PA.

IN CANADA: SAFETY SUPPLY CO., TORONTO

## ... AND IT FELL ON HIS COMPROMISE



The finest in foot protection is a pair of safety shoes, but you probably have at least one man in your plant who doesn't wear them.

For him the best compromise is StaSafe Toe Clips, impact resistant steel clips that can be permanently nailed or temporarily fastened directly to his work shoes. Lightweight and low cost StaSafe Toe Clips combine comfort with protection.

Write in Today for Toe Clip Bulletin S-6.



### Standard Safety Equipment Co.

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## After Work in Corrosive Atmospheres

When personal protective equipment is worn in a corrosive atmosphere, a rigid procedure should be set up for taking care of it after use to prevent contact with contaminated parts.

Before removal, even though it has not come in contact with cor-



Suits of rubber, neoprene or plastic are worn by those who handle strong acids and other corrosive substances.

rosive chemicals, the equipment should be washed thoroughly with a hose stream.

Remove boots, coats, aprons, and hats—then gloves. This is the logical order of removal if the coat has been put on properly with the sleeves outside the cuffs of the gloves.

Wash hands thoroughly before removing face shield and goggles. Then wash hands and face thoroughly again. A shower and change of clothing are better.

## Distributing Equipment And Getting It Used

DURING recent years there has been a marked trend to give employees individual protective equipment. Articles used by an individual are personal things and, in most cases, should belong to him.

The days of the community dipper and water bucket have long since passed in the modern factory. So have the days of the single pair of goggles over the grinding wheel. Many companies have found that employees will accept and wear protective equipment more readily if comfortable equipment is individually furnished and kept clean.

It is simple enough to decide that

employees should be equipped with proper protective devices but in plants with diversified operations it is often difficult to carry out such a program.

The first step is a comprehensive survey of the plant. This should establish complete records of the equipment required in various operations. Changes in operating conditions and other variable factors should be watched since these will result in changed requirements.

Establishing requirements for protective equipment and acquainting both supervision and the man on the job with these requirements can be done effectively. Following is one method of approach:

- Equipment can be specified for an entire area—e.g., anyone entering an acid manufacturing plant must wear chemical goggles, or all personnel working in warehouses must wear safety shoes.

- Equipment can be required by general categories—e.g., personnel handling *any acids* must wear rubber or plastic gloves and chemical splash-proof goggles.

- Where a large number of potentially hazardous materials may be handled infrequently, a schedule can be established with the specific requirements\* for each category of chemicals. Orders are coded so that the supervisor can refer to this schedule and make sure that all personnel handling the material are adequately protected.

This procedure is particularly desirable where the hazardous properties of chemicals vary widely, since requiring employees to be overly protected when handling innocuous materials has a bad effect on morale.

Most operations in chemical plants should be surveyed and a combination of the above steps utilized. Employees should be instructed as to the precise equipment required during the various stages of operations.

A list of approved equipment for various operations should be established. Equipment should be selected on the basis of design, performance, reliability of manufacturer, etc.

It is desirable to standardize items throughout the plant insofar as possible. It is likewise good policy to review the list periodically, modifying it when new and improved equipment becomes available.

Adequate supplies of various items, in a well-assorted range of sizes, should be kept in stock. A competently supervised marker system is usually the most feasible for assuring adequate supplies. It doesn't help a new employee's atti-

# SKIDMASTERS



## SURE GRIP SANDAL THAT PROTECTS THE FEET

(Comfort and safety on hot, cold or slick floors.)

- Three quarters of an inch of tough Skidmaster belting between the soles of the shoes and the floor means comfort on hot, cold or wet floors and sure safety on slippery surfaces. Yet Skidmasters are about as flexible, lightweight and comfortable as an ordinary sandal.

Skidmasters are constructed for rugged, long-wearing, durable performance. Every part is of top

quality material from the heavy gauge, copper coated steel wire binding cross treads to non-skid outer wall, down to the anchor rods for toe spring and ankle straps.

Brewery model Skidmaster has no exposed metal parts to come in contact with glass-lined tanks.

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## The **HEAT'S OFF** with

## LIBERTY ALL-LEATHER HEAT RESISTANT GLOVES

These gloves are not ordinary work gloves, but are made from a patented process on soft, flexible leather, impregnated with insulating and refractory materials.

They have outworn ordinary work gloves six to eight times on many operations. Temperatures from 500 degrees F to 800 degrees F can be safely handled, depending upon the type of glove required.

Not only do they afford protection to the hands, but many hot materials can be handled without tongs or other equipment, thus saving both time and money.

If your dealer cannot supply you, we would be pleased to receive your inquiries.

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# LOOK TO STEEL-GRIP FOR BETTER PROTECTION AT LOWEST COST

## JAXCOLITE

Amazing new compound makes asbestos, duck and burlap garments extremely resistant to heat, molten metal splash, acids, caustics, oil and water. Long wearing and low cost. Users won't buy anything else. Nothing to compare with it. Available in coats, pants, aprons, sleeves, leggings, spats, hoods, etc.



## HEAT REPELLENT ALUMINIZED ASBESTOS

Aluminized surface reflects up to 95% radiant heat. Asbestos body resists fire. Result is cool safe protection. Available in all body protection garments.

## SPRING-TYPE LEGGINGS, AND APRONS

Spring-type Leggings made of chrome leather, flameproof duck or asbestos. Easy to put on and off. Air-pocket lining for comfort. Special close-fit collar. Tuck-in flaps protect back of legs. Many types of aprons available in all materials and styles. Tell us what you want.



## CERTIFIED ASBESTOS SAFEGUARDS

A Steel-Grip "first". Steel-Grip has own laboratory, tests all its raw materials. Our tests show following specifications give longest wear, greatest strength: Minimum of 83% asbestos, maximum of 17% long fiber cotton content. 20 warp ends per inch, 10 wool ends per inch. Minimum weight 2.47 lbs. per yard. Warp tensile strength min. 145 lbs. Wool tensile strength min. 65 lbs. Every Steel-Grip asbestos safeguard certified to you to meet or beat these specifications. Your guarantee. Demand this certified label. Coats, pants, gloves, mitts, etc.

Steel-Grip offers a complete line of safety apparel for every industrial need. Note especially the Steel-Grip designs in new materials extremely resistant to heat, molten metal splash, acids, caustics, abrasion and wear. Since 1910, quality manufacture from selected materials has been our standard practice. We offer correctly designed safeguards, in leather, duck, Perma-Proof materials, asbestos, wool, Dynel cloth, Jaxcolite-coated materials, aluminum-coated materials, etc. They give long wear, uniform dependability at the lowest man-hour costs... the real measure of value. Don't buy on appearances or first price. Buy safeguards like you would buy machines... on performance. Buy tested and proved Steel-Grip safeguards and watch your costs go down. Write today for complete catalog.

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## STEEL-REINFORCED LEATHER GLOVES AND MITTS

Finest quality chrome-tanned leather, in varying weights with varying degrees and styles of steel reinforcement, according to the conditions of the job. Afford the utmost in wear and abrasion resistance.

tude toward safety to send him to the stores for specified equipment and be told that the stock is temporarily depleted.

It is also disastrous to issue equipment that is ill fitting. It will be uncomfortable and offer reduced protection.

Most companies issue personal protective equipment without cost to the employees. This is only natural, since if the company cannot provide a completely safe working environment, it should provide the necessary means for the employee to protect his life and health.

Some managements issue certain equipment and pay only a portion of the cost. Notable examples are safety shoes and prescription safety glasses. This category generally includes equipment which is of a supplemental nature and is supplied as a service to the workers.

Experience has shown that employees tend to take better care of property in which they, as well as the company, have a financial interest.

Low-cost items used in considerable quantities can be most conveniently issued at the various manufacturing areas. More expensive or specialized equipment should be stocked and issued at a central point, so that a minimum working stock can be maintained. Authorization for its withdrawal should come from the worker's immediate supervisor, since he is in a position to maintain a watch over consumption and prevent needless waste.

The stock room should be neat, clean, orderly, and presentable. Its appearance will have a marked effect on the employees' acceptance of equipment. No one likes to think of wearing respirators that have been stored in a room where poor housekeeping is in evidence. This factor is particularly important in the case of new employees, who often get their first impression of a plant when they are sent to the stores for equipment.

From a morale standpoint, it is desirable to clean, sterilize, and repair dirty or worn-out equipment as needed, and always before use by another person. Some plants have an employee who moves throughout the operating areas—cleaning, sterilizing, and adjusting safety devices, such as goggles, respirators, etc.

Other items could more conveniently be cleaned and reworked at a central point where spare parts are available. Manufacturers are usually happy to furnish instructions for reworking and cleaning personal protective equipment.



### Combustibility of Fabrics

**Acetate.** Ignites readily, melts and burns quickly but somewhat less than rayon or cotton.

**Acrilan.** Ignites readily, melts and burns like cotton.

**Cotton.** Burns rather rapidly.

**Dacron.** Ignites with difficulty, melts and burns slowly.

**Dynel.** Difficult to ignite, melts but does not support combustion.

**Fortisan.** Burns rapidly but is more resistant to heat than cotton or linen.

**Nylon.** Quite difficult to ignite, melts but does not support combustion.

**Orlon.** Ignites readily, melts and burns like cotton.

**Polyethylene.** Melts and burns very slowly.

**Rayon.** Ignites readily and burns rather rapidly.

**Saran.** Ignites with moderate difficulty, self-extinguishing, melts but does not burn.

**Vicara.** Burns rather easily but less flammable than rayon and cotton.

### PROTECTION AGAINST CHEMICALS Acids and Alkalies

When exposed to acids and alkalis, protect yourself by wearing the proper clothing.

1. If there is danger of spills from above, wear acid hood, rubber coverall, gloves and boots. See picture.
2. Where minor splashing is the only hazard, wear goggles, rubber boots, rubber apron and gloves.
3. Tuck the glove gauntlets inside your sleeves.
4. Keep your trouser legs outside your boots.



**Remember:** The best of clothing is only partial protection. Complete safety depends upon how you handle the chemicals with which you work.

NSC Safety Instruction Card No. 42

**Vinyon & Vinyon N.** Difficult to ignite, melts but does not support combustion.

**Wool.** Burns slowly tending to be self-extinguishing.

**X-51.** Melts at open flame.

### Treat Power Mowers With Respect

A million and a half power mowers are sold in the United States each year. Most of them are for homes but industries and municipal park districts also use them extensively.

There are two types—reel and rotary. The rotary type accounts for some 80 per cent of current sales.

With few exceptions power mowers are safety designed. Users should check their mowers to note any dangerous features, such as lack of guards covering moving parts. In the use of such mowers, however, considerable care must be taken. The following rules will help:

1. Read and follow safety rules. Teach them to members of the family.

2. Avoid using the mower when it is raining or when the grass is wet. Footing is uncertain then, and with electric power mowers there is more danger in case of a short circuit.

3. Clear the lawn of stones, wires and other debris first. Keep children and pets away.

4. Stop the engine before touching the reel or rotary mower's blade to remove objects. Disconnect the spark



## OIL CAN'T HURT THIS SUIT— OR YOU!

It's here — the "Refinery Suit" — scientifically designed and made especially for protection against all petroleum products. They can't eat away or destroy this suit. It's double-coated, inside and out, with neoprene. Impervious — so oil products can't seep through and irritate skin. Can be laundered or dry-cleaned. Available in yellow or aluminum. Look into new "Refinery Suits" for your men now!



**NEOPRENE APRON**  
• for oil, grease, fat, acid-resistance • double-coated with neoprene

**STEEL-TOE WORK SHOE**  
• black "Royal-Tuff" finish  
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**NEOPRENE SHORT BOOT**  
• maroon • cleated outsole • "Shock-proof" insole





**U. S. INDUSTRIAL RAYNSTERS®  
U. S. ROYAL RUBBER FOOTWEAR**

# United States Rubber

plug wires before working on the underside; tip the mower over by means of the handle. Don't reach under the deck, chain guards or belt guards.

5. Be especially certain of footing and balance when mowing on inclines. Downhill mowing is perhaps the more hazardous.

6. Store fuel in approved, tightly-sealed containers.

Rotary mowers turn from 3400 to 3800 rpm. The tip moves almost as fast as a rifle bullet and can do as much damage.

### If They Don't Fit They Aren't Safety Shoes

Poorly fitted shoes are a frequent source of discomfort and disability, both on and off the job. In industry it has been estimated that 65 per cent of the men and 75 per cent of the women suffer from foot ailments.

Comfortable and apparently correct shoes are responsible for a surprisingly large number of cases. Although a shoe may feel comfortable, it may not give adequate support,



"Wow! It's a good thing I'm using quick-drying paint."

or it may even upset the normal balance of the foot.

Short shoes are common offenders. When too short from the heel to the ball of the foot they can cause more trouble than shoes which are too narrow.

Shoe lasts that do not allow for

normal foot movement within the shoe cause much foot fatigue.

Much of the success of any safety shoe program will depend on the fit and comfort provided.

### Before You Order a Truck

More than one company has ordered an expensive fork truck and then found it wouldn't fit the factory. Here are things to be checked before selecting materials-handling equipment:

- Floor load capacity.
- Ceiling height. Trucks must clear sprinklers, pipes, heating equipment, etc., where extra high lifting is involved.
- Doorway height and width. This factor ought to be obvious enough but it's sometimes overlooked.
- Elevator size and capacity.
- Receiving and shipping areas. Will the truck be able to maneuver with full load?
- Ramps and inclines. Grades that are too steep mean more power and more wear and tear on equipment. An 8 per cent grade is high enough for a truck; 5 per cent for a tractor and trailer train.



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**Exclusive White Knee Boot.** Ideal for dairies, food processors, ice cream manufacturers, chemical plants, meat packers, petroleum industries, etc.

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 Plain or Steel Toe. Fully lined. Soft sponge inner sole. Heavy duty heel and sole. Scientifically designed for wearer's complete protection and comfort.

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**Exclusive—**  
 Steel innersole built in and safety toe to protect the wearer against injury from falling, and sharp objects. The steel innersole is fully flexible and runs the entire length of boot. Will withstand 200 lbs. of pressure.

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Warehouse: 17 E. 23 rd St.      Office & Warehouse: 2958 S. Vernon Ave.

## A System for Handling Personal Equipment

This system, in operation in a large aircraft plant, can be modified to fit the requirements of smaller plants.

Purchases and standardization of products are determined by the safety engineer. Equipment is distributed



free to employees through a sign-up system which makes the employee responsible for gloves, aprons, footguards, etc., while they are in his possession.

The safety department has insured the proper equipment being in the areas where it is in demand by regulated control through a system of tool cribs and a mobile dispensing unit for eye and respiratory items.

To eliminate the necessity of employees having to get clearance from the safety department for each item, certain departments are listed with the tool control distribution system and their general needs are specified.

New processes and production methods requiring special equipment are called to the safety department's attention through the process engineering department, and protective equipment is furnished to those doing the new work.

A complete stock of spare parts for the repair of goggles, respirators, etc., is carried, and a specially designed, exhaust-equipped sterilization bench is maintained for reconditioning the equipment.

Use of single items of personal equipment by more than one person is rigidly controlled. Large units, such as air-supplied respirators and sandblast helmets are sterilized after each use.

Leather gloves for men and women, welders' aprons and jackets, and all other clothing items, are laundered or sterilized after being replaced with clean apparel.

To prevent distribution and use of misfit equipment, a system using

the goggle-dispensing unit has been adopted. Representative supplies of goggles are taken to production departments and the unit operator equips employees who are sent to him by their supervisor.

The plan of having employees come to the unit in groups of not more than three is developed by a safety inspector who does the preliminary work one day in advance. He develops a demand for protection and supervision is then held responsible for seeing that employees report to the unit for new goggles or

for adjustment. This plan has overcome much of the resistance to protective equipment.

Scratched lenses are replaced and the glasses sterilized before being put back into use.

To supplement this method of distributing goggles, the services of an optometrist are available to those whose eyesight needs correction and want their next pair of spectacles with heat-treated lenses. The optometrist serves all three shifts once a week and supplies employees with safety glasses ground to their pre-

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Cap shown is Style No. 202-F. Gloves shown are made of the finest synthetic rubber to offer protection against oils, acids, greases, chemicals, etc.

scription at a nominal cost. Employees are examined and fitted on company time.

Aside from prescription goggles, only two other protective items are purchased by the employee. Safety shoes for men and women in two colors and a variety of styles are sold at near cost.

Special rubber footwear is furnished without charge on the employee's requisition form. Use is limited to assignments which require workers to be in wet areas or out of doors in inclement weather. After

each wearing boots are sterilized.

The other item for which employees pay is a standardized woman's headdress which is sold at cost. Women are not compelled to wear this particular type of headwear but it is offered for sale to promote the kind of cap approved by the safety department.

Three types of hand cream are supplied to workers whose exposure presents the possibility of skin disorders. Personal hygiene is stressed along with the use of protective cream.

## A Mine's Fire-Fighting And Rescue Program

Helping to reduce risks involved in fire fighting and mine rescue work at The Cleveland Cliffs Iron Company mines, Negaunee, Mich., is a soundly conceived, well executed safety program.

Heart of the Cleveland-Cliffs program is: (1) Regularly scheduled twice-a-year training for approximately 200 employees and (2) Adequate supply of various types of safety equipment.

Proper use of the company's safety equipment has helped solve the underground fire-fighting problem by providing protection for members of the mine rescue teams.

The safety training program, supervised by Cleveland-Cliffs director of safety, is based on the correct use of the safety devices offering protection against hazardous conditions which might be encountered in emergency operations. Classes are held in the company's modern mine rescue station which contains necessary equipment for training.

Each mine is equipped with the necessary instruments to detect carbon monoxide and other poisonous gases, vapors and smokes. Colorimetric carbon monoxide testers are used to determine the carbon monoxide concentration and flame safety lamps indicate the presence of methane gas, natural gas or oxygen deficiencies in the air.

Rescue equipment to protect the wearer's respiratory system includes two-hour oxygen breathing apparatus that provide a "lung-governed" supply of oxygen to the wearer and Chemox oxygen breathing apparatus that generate their own oxygen to provide complete protection for 45 minutes against concentrations of toxic gases and oxygen deficiency.

Monthly inspections of safety equipment by their safety engineers assures a constant state of preparedness and keeps equipment replacement costs at a minimum.

## Auto Safety Belt Proves Its Worth

A recent automobile accident in which a Du Pont employee and his wife were involved has convinced them of the value of safety belts.

While they were driving on an Illinois highway, an approaching driver, in attempting to pass another car, was caught in the wrong lane and in a last-minute decision, swerved his car toward the shoulder. The employee had wisely slowed down almost to a stop and the ap-

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## CHARLESTON RUBBER COMPANY

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CHARLESTON, SOUTH CAROLINA



proaching car only sideswiped the right side of his car. The car was damaged considerably but the occupants were uninjured.

The other car went into a ditch and came to rest when it struck a tree. Two women passengers were shaken up and bruised but the male driver was unhurt except for a bump on his head. Fortunately he was wearing a safety belt. Despite this fact, the impact of his body bent the steering wheel. Had he not been wearing the safety belt, he would probably have been thrown through the windshield.

The company reports that more and more employees are installing safety belts in their cars.

### Accident Costs Stressed In Air Force Letter

Every quarter of the year, Air Materiel Force, European Area, depot commanders receive a bill entitled, "Indebtedness to the U. S. Government."

A typical letter was the one received by the Central Air Materiel Area, Europe, Commander in France. It stated bluntly: "You and the personnel of your command are indebted to the United States taxpayer in the amount of \$85,793 as a result of ground accidents. Certain concessions were granted to you to assist in liquidating your previous quarter indebtedness of \$9,459. Records in this headquarters indicate that this debt has not been satisfactorily liquidated. Therefore, your total indebtedness to the U. S. taxpayer now amounts to \$95,252. Prorated, this amounts to \$11.66 per individual in your command. Your creditor will again grant you concessions to assist in liquidating this total debt. This can be done if you accomplish any one of the following:

1. Reduce your next quarter ground accident losses at least 75 per cent below that of the present losses.

2. Reduce your civilian injury rate at least 10 per cent below that previous quarter.

3. Reduce your military injury rate at least 10 per cent below the previous quarter.

4. Reindoctrinate your personnel on traffic safety so that the coming holiday week-end is accident free.

Another paragraph advised: "That you take action to effect prompt settlement of these outstanding accounts."

The plan has helped reduce the cost of ground accidents within AMFEA. During 1955, costs show a

reduction of more than 40 per cent under the cost for 1954.

According to Captain Frank J. Freitas of the Ground Safety Division, ground accidents for 1954 cost the government \$602,780. In contrast, the cost for 1955 totaled \$366,143, a reduction of \$236,637.

The figures were computed on the basis of deaths, temporary total injuries, first aid treatment, and vehicle, aircraft and property damage. Of interest is the trend in private vehicle accidents: private motor vehicle operation accounts for only

7 per cent of the injuries in AMFEA, in contrast with the stateside average for the Air Force of 32 per cent.

### Blasting Cap Accidents Increasing

According to the Institute of Makers of Explosives, the frequency of blasting cap accidents among our younger population is rising again.

The Institute's figures show that this type of accident declined steadily from a high of 344 in 1929 to less than 100 during the years 1947

## No Time Wasted!

WHEN WORKERS WEAR

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## WINDSOCKS

The Safety Hat Liners  
That Need No Installation

9" length \$2.64 Doz.

11" length \$3.00 Doz.



Windsock is a throw-away type head covering that's easy to use. Inexpensive—it actually costs less than the time alone spent by a worker in installing or in removing a permanent type liner. Warm, lightweight and snug-fitting. Windsock puts an end to those chilly drafts that whistle between the safety hat shell and cradle.

Write for Descriptive Bulletin No. 52

## STANDARD SAFETY EQUIPMENT COMPANY

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## NEW! SAFER WELDING GLOVES

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Pat. Pend.  
No. 515429

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through 1952. In 1953, however, 132 youngsters were injured and in 1954, 189 were injured.

The explosives in blasting caps are very sensitive and, in the hands of an inexperienced person, extremely dangerous. Comparatively few persons know what a blasting cap looks like and children are particularly susceptible.

When a cap explodes, hundreds of small pieces of metal fly out in all directions—sometimes as much as 200 feet—and even at that distance could cause blindness.

Blasting caps are used to "trigger" explosive charges and will be found almost anywhere that dynamite is used. Often, children recover lost or misplaced caps in these areas.

To help control these accidents, the Institute of Makers of Explosives has a kit of materials available which discusses the dangers involved and gives instruction on what to do when a blasting cap is found. The kit contains a study-discussion sheet, a poster illustrating the various types of caps and an illustrated leaflet describing the Institute's safety film

"Blasting Cap."

The material is available on request from Institute of Makers of Explosives, 250 E. 43rd Street, New York 17.

## Oral Communication Can Be Interesting

Much oral communication—in safety as in other fields,—does not achieve its purpose. More often than not, responsibility for the failure lies with the speaker.

Where speakers fall down in getting their ideas across is outlined by David C. Phillips in Chapter 4 of his book, *Oral Communication in Business*. (McGraw-Hill Book Company, 1955, price \$3.75.)

Here are a few excerpts:

A speaker cannot transfer ideas and material from his brain to that of the listener. He must present his ideas in such a way that meanings are stirred up in the mind of the listener.

The speaker cannot transfer the idea of greater productivity, or higher wage scales, or the need for more safety devices to the listener; he can only arouse in the latter's mind and heart some of the feeling and desire to see these things accomplished.

If his ideas are worthwhile and his presentation stimulating, listeners react by paying attention, and in so far as their background and experience will allow, they respond to the ideas he presents.

This places a great responsibility on the speaker. If he cannot get a response from the listeners by an effective presentation, his ideas may get no further than if he had never voiced them.

It is not enough for a speaker to have some material available for his presentation. He must have the material available that will allow him to choose the approach that will work best with the listeners present.

Most people respond well to images. Politicians create phrases and slogans. Advertisers search for vivid words such as "hospital clean" washes or "brisk" tea.

Speakers, too, should take advantage of the opportunity to create images which the listeners can understand and respond to.

**Illustration.** We all love to hear a well-told story. If the point of the story helps develop the idea under consideration, the speaker not only has the interest of the audience but



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A  
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Y

Our feet have a lot of bones which we have forgotten.  
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at the same time is helping the progress of his speech.

**Concreteness.** Many speakers are so familiar with their subject that the mere mention of an idea will start them thinking. However, many listeners will lack a complete enough background for this to happen, and thus the speaker will need to include concrete material to accomplish this goal.

Recently a business executive who was thoroughly familiar with the problem of wasted material in his company was speaking to other company executives on the subject. He was pleading for new ideas to either cut down on the amount of wasted material or find some simple question: "For example?" The speaker then gave two or three illustrations concerning the inventories of department heads who were present.

Interest immediately picked up and the instructor had to stop the questions in order to allow time for the next speaker.

The difference between the two speeches was mainly in the use of illustrations that started the thinking of the audience.

After the first presentation the

audience was not interested enough even to ask, "For example?"

Ideas must be concrete not only to the speaker, but more particularly to the listener. For instance, such notions as "350 feet long," "20,000 square feet of space," "5 per cent of our production" are concrete.

However, the conception of the listeners of what these measurements mean may be weak. To make

them immediately understandable to the audience so that the correct response is attained, it may be necessary to say, "The distance from this room to the main office," or "This amounts to the entire production of our 20 best employees for a whole year."

Listener understanding and response is the goal all material must help to achieve.

### FLOW SHEET FOR SAFETY PROMOTION

1. Organize for safety, employing all available skills to the fullest degree and enlisting all interested parties.
2. Train and educate for safety, using well-planned, interesting programs for workmen, supervisors and management.
3. Maintain the physical features of the plant and its surroundings in the approved manner to eliminate conditions leading to accidents.
4. Keep interest alive with a continuous program of safety incentives. Any of these should be scrapped in favor of new methods the minute it loses its appeal.

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**WELDTAN**  
**LEATHER**  
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World's Oldest and Largest Manufacturer  
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## Need A Hearing Aid?

The person in search of a hearing aid usually has two choices. He may visit a number of dealers, trying the various instruments, and finally buy the one that seems to give him the most hearing. Or he may visit a hearing clinic at a college, a hospital, a school for the deaf, or one conducted by a specialist or a society for the hard of hearing.

Services offered by clinics may include hearing aid selection, training to use an instrument, instruction in lip reading, speech correction and guidance in solving personal or employment problems.

Services at a hearing clinic include an audiometric test to determine the extent of hearing loss. Each ear is tested separately for air conduction and bone conduction.

An examination by an otologist or ear specialist is essential. Clinic services, as a rule, are non-medical. A medical examination will show whether or not hearing loss might be corrected by treatment or surgery.

When the otologist reports that an instrument is advisable, the technician will begin the selection procedure. Most clinics do not sell hearing aids. Since no one make of aid

can be prescribed for all types of hearing loss, the clinic will have from six to 10 makes of instruments from which to make a selection.

The number of instruments a person wishes to try may be limited by the following factors:

1. Does the hearing aid have a representative in your community? If not, there may be delays in repairs or battery supplies. In smaller communities it may be wise to depend on the facilities of the nearest city.

2. Cost and convenience. Standard models may vary in price from \$50 to \$200. The cost of batteries for the length of time the battery may be used are also important. The newer transistor types are compact and economical to operate.

If an audiometric test is not a part of the dealer's fitting procedure, it is advisable to present a copy of the otologist's test report. If a test is given by the dealer it may be compared with the otologist's report. Although there is a difference in audiometers, the curve of the test results should be approximately the same.

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STYLE 608-23

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Chrome-tanned split cowhide with neck strap. 23½ inches long.

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Factors to be considered while trying the instruments are:

1. Increased hearing for speech is the objective.

2. The hearing aid must not make speech uncomfortably loud.

3. The wearer should hear comfortably, without the sensations of tickle or pain.

4. The instrument must have a certain reserve of power. If speech is barely audible with the volume control turned to the loudest point, the instrument is inadequate.

5. There is not as much difference between similar models of the various manufacturers as the dealer may try to impress.

Important in the purchase of an air-conduction instrument is a mold to fit the ear under which the receiver is fastened. The mold, made of plastic, is usually included in the price of the instrument. The proper fit of the ear piece is important. One that fits too loosely will result in a distracting squeal. One that fits too tightly will cause discomfort.

Learning to use a hearing aid is easy for some persons, but for others it requires patience and persistent effort. The wearer must learn to accept and interpret both pleasant

and unpleasant sound alike, just as persons with normal hearing must do. Users who are most satisfied are those who wear their instruments every day, all day, seldom varying the volume control. Thus they become accustomed to all sound heard by persons with normal hearing.

### Prompt Treatment Prevents Disability

Serious injuries are handled much more quickly and effectively than formerly. On the other hand, minor injuries, the small cut, the almost insignificant fracture wound, the mild burn, are still too often disregarded by the worker. Superficial infection of the finger can become a deep infection of the hand with all the dire consequences which can follow. Responsibility for the results of any injury of whatever degree must be shared primarily by two individuals—the victim of the injury, and whoever administers the initial treatment, whether it be nurse, first aid worker, or doctor. The worker who is injured must report the injury before he can receive proper treatment.

The very simplicity of the safest treatment has often made it open to suspicion. Broadly speaking, there are two *musts* in such treatment: a wound must be protected from further bacteria by being covered with a sterile dressing; it must be protected from motion, as well as further injury to the already damaged tissues by useless probing.

There are at least two *musts* *nots* which need to be emphasized—strong antiseptics must not be used, and the dressing must not be changed frequently just for the sake of applying a clean bandage. Certain developments do require inspection of the wound, but there are, on the average, fewer bacteria in a wound under a pus-soaked dressing which has not been changed for several days than there are in the same wound if the dressing has been changed once or twice a day.

These principles in the treatment of wounds are easily misunderstood. Wounds in which may be large particles of dirt, or fragments of metal, wood or clothing, require the removal of such by sterile instruments or gentle irrigation.

Wounds in which the injury has



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ON EVERY  
JOB... GET  
GRANET GLOVES**

Give your workers the protection they need in handling chemicals, oils and abrasive materials. Give them GRANET gloves — fully coated or palm coated with neoprene, rubber, or plastic for positive, safe, non-slip grip. Ask your distributor.

GRANET gloves are made for every job, in a complete range of styles. They outwear ordinary gloves yet cost no more. Test GRANET gloves in your plant now, without cost or obligation. State type of use, so that we can provide correct glove.

**GRANET**

**THE GRANET CORP.**

**19 LORING DRIVE, FRAMINGHAM, MASS.**

produced crushed and dead tissue need surgical removal of such tissue as soon as possible. Larger wounds with gaping skin edges may be safely closed by sutures when expert judgment can be reasonably sure that they will heal without infection.

Such procedures are not for the patient to perform, nor even for the nurse or attendant who just sees the injury.

### **Restrain That Impulse!**

When an injured person who is conscious is discovered, the first impulse of many persons is to help him to his feet. These well-meaning Good Samaritans can add to his troubles.

Even an apparently simple fall may result in a hip fracture. In such a case, unnecessary movement may displace the fragments or damage nerves, blood vessels, or muscles.

World War I taught an important lesson—that a wounded soldier should not be moved until it is certain that no bones are broken. In case of broken bones, the parts are immobilized.

If an ambulance can be obtained quickly, the attendants will know exactly what to do. Careless lifting may lead to internal injuries, or possibly increase hemorrhage. The least desirable form of transportation is the back seat of an automobile. In the absence of an ambulance, a truck or delivery wagon will do, if one can be commandeered.

At the hospital, an x-ray will show the nature of the disability. It may not be desirable to make adjustments until swelling has subsided. The job is to keep the patient comfortable while restricting movement of the injured parts.



"When I said to be careful around me because of gas, Burton, I wasn't hinting for a Tum."



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Singer's new KOOL-MITT is ideal for use wherever any other mitt has proved inadequate. It is made for efficient and economical use in such places as foundries, heat treating plants, steel mills, pottery works, etc.

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This mitt is stitched with steel staples for long life . . . outlasts up to four pairs of reinforced asbestos mitts and in some instances has replaced asbestos gloves.

Write today for prices and samples.

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**TOP QUALITY**

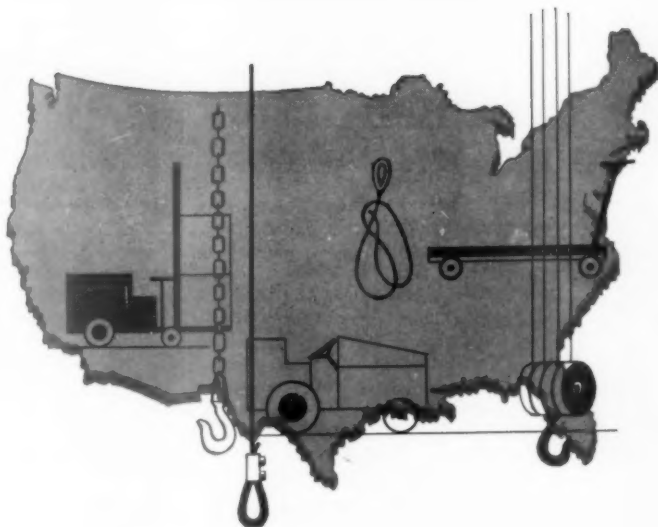
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# MATERIALS HANDLING



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**B**Y THE TIME a product reaches the consumer it has been handled many times. Producer, processor, wholesaler, and retailer all handle it several times in addition to the transportation agencies between the various steps in distribution. The ultimate selling cost includes many man-hours in handling, also the cost of accidents that may have occurred along the line.

Handling objects, according to recent estimates, accounts for some 22 per cent of all disabling injuries. As a cause of fatalities and permanent total disabilities, it is exceeded by falls, electricity, falling objects, vehicles, and machinery. But handling objects is involved in 26 per cent of the total disability cases.

Mechanical equipment avoids many of the hazards of manual handling, largely by reducing the human exposure and preventing strains, blows, and abrasions. But mechanization introduces some hazards of its own. To avoid them, study plant processes and handling methods, select the right equipment, keep it in serviceable condition, and train employees in its use.

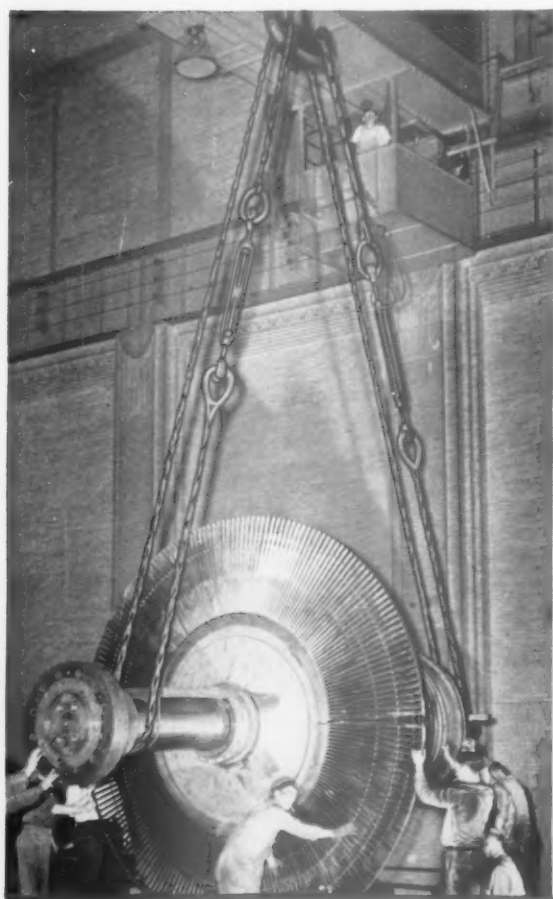


Two ATLAS Type 1, Round-Braided Slings handling 125-ton refinery vessel.



Two ATLAS Type 1, 8-part Round-Braided Slings handling 35-ton gear drive unit.

## These specially balanced slings make material handling safe, fast, and easy!



ATLAS slings are specially constructed to give you safe and easy handling of materials.

Because these slings are flexible and easy to handle, loads can be handled faster. This maximum flexibility permits the sling to hug the load with a safe, full-gripping contact. Because of the balanced ATLAS construction, each rope in the body carries an equal share of the load. These features give safe, fast, low cost handling.

If our wide variety of custom sling types and sizes doesn't include the sling you need, we will be glad to custom-design and custom-make slings for you.

Ask for free sling Catalog S-8 which lists and illustrates types and sizes of Macwhyte slings.

**Call your Macwhyte distributor for prices, literature, or catalog; or write direct to Macwhyte Company.**

## MACWHYTE SLINGS

**Macwhyte Company, 2902 Fourteenth Avenue, Kenosha, Wis.**  
Manufacturers of: Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel Wire Rope, and Wire Rope Assemblies.

### MILL DEPOTS:

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Two ATLAS Type 5, 8-part Round-Braided Slings with jaw and jaw turnbuckles precision handling a 50-ton turbine rotor.

**Here's ATLAS  
balanced braided  
sling  
construction**



1. One right lay and one left lay wire rope are each spliced endless.
2. These ropes are hand-braided to form a round sling body.
3. All ropes in the body react in the same manner when loaded and each rope carries an equal share of the load.
4. These features produce a lightweight, flexible, kink-resisting sling that hugs the load for safe and economical handling.

10968



# MATERIAL HANDLING FUNDAMENTALS

**FOR MOVING** large quantities of materials in more or less continuous flow in fixed paths, conveyors, traveling cranes, railroads, and elevators are used.

Trucks, tractors, and trailers are better suited for moving goods intermittently between many points in plant and yard, without regard to fixed limits.

Portable types of equipment are needed in every plant. In the smaller establishments they serve all handling needs. In the larger industries they are useful auxiliaries to fixed systems.

This discussion will be concerned chiefly with portable equipment in common use, including:

1. Wheelbarrows
2. Hand trucks
3. Hand lift trucks
4. Powered hand trucks
5. Industrial power trucks
6. Hoists
7. Cranes
8. Conveyors
9. Slings and accessories—wire rope, chains, fiber rope.
10. Miscellaneous equipment—skids, pallets, steel strapping, grabs, tote boxes, bridge plates, dollies, etc.

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## LOAD-BEARING PARTS

Wire rope, chain and fiber rope are important wherever loads are lifted or hauled. These products are built to meet exacting specifications and their capacities are listed according to size, material and type of construction.

Slings made of these materials, and attachments, such as hooks, rings, etc., are designed to meet the needs of every hoisting job.

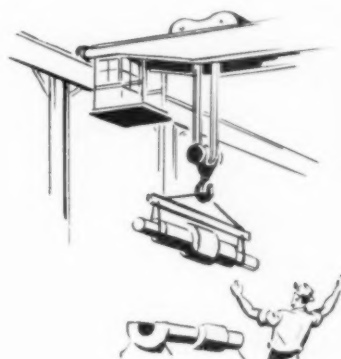
These parts are subjected regularly to heavy loads, sometimes overloads. They should be selected for the needs of the job and kept serviceable by regular inspection and maintenance.

## UNIT LOADING

Assembly of loads on skids, pallets or trailers to be moved from one part of the plant to another means less handling and more pieces per each handling. To move the load, it is only necessary for the truck to slide the platform or fork under the skid or pallet or to hook a tractor to the trailer.

A **skid** is a platform elevated from the floor by legs, casters or special attachments.

A **pallet** is a development of the platform skid. The most common



type is the double-faced wooden pallet with sufficient clearance between top and bottom to insert the forks of a fork truck for moving.

**Clamps** of various types add to the usefulness of fork trucks. These can move and pile drums, bales and cartons without use of pallets.

**Steel strapping** provides a secure method of fastening some types of bundled materials for shipping and for reinforcing packing cases. Workers need training in application and removal and should wear goggles and leather palm gloves for the work. Equipment available from suppliers should be used for applying and removing strapping.



Tackle storage crib has shelves and racks for hydraulic jacks, chains, rope falls and hand lines in orderly arrangement. (National Supply Co.)

# TRUCK AND TRACTORS

**THERE ARE** wheeled vehicles for every hauling or lifting job. Both hand and power-operated models keep goods flowing in factories, warehouses, docks and railroad terminals.

## POWER TRUCKS

Industrial power trucks are operated by engines using gasoline or liquefied petroleum gas, or by storage batteries. Many trucks designed for gas have been converted to LPG.

Power trucks should be constructed and equipped to comply with the power truck code specifications for fire protection. These specifications are minimum requirements for trucks in ordinary locations. For hazardous locations requirements are much stricter.

Hazardous locations are defined by the National Electrical Code as follows:

Class I—Where flammable gases or vapors may be present.

Class II—Combustible dust.

Class III—Easily ignitable fibers or flyings.

The power truck code (ASA B56.1-1950) stipulates that electrical or gas-powered trucks may not be used in these locations unless specifically approved by the inspection authority for the location involved.

Types of trucks covered by the ASA code include high-lift, low-lift, fork and platform high and low-lift trucks, tractors, saddle trucks, crane trucks, powered hand trucks, and other special trucks.



Powered hand truck and trailer controlled by walking operator. When connected, truck wheels are clear of ground and trailer is an integral part of the tractor.

Where trucks are operated in confined spaces, carbon monoxide from internal combustion engines is a problem. Use of catalytic exhaust on trucks permits operation in indoor locations where there is normal good ventilation. One type of catalytic exhaust is suitable for white (unleaded) gasoline and liquefied petroleum gas. Another can be used with leaded gas.

**Fork lift truck.** This has become the most widely used power truck. It is a cantilever type self-loading truck with vertical uprights and elevating mechanism. Fork trucks permit handling of loads on shallow double faced pallets as well as skids. Pallets afford a wider load distribution which is an advantage in tiering.

Attachments are used for handling a variety of packaged and bulk materials. Clamps permit moving cartons, bales and drums without pallets.

Dumping attachments are used for discharging liquid, solid and granular materials.

Canopy guards are required by code for fork trucks where the operator is exposed to danger from falling objects. The guard should be strong enough to support a capacity load and have no opening larger than the smallest package carried.

**Scoop trucks** shovel loose materials and elevate and dump them into hoppers and bins.

**Powered hand truck.** The truck, similar to a hand lift truck, is pow-



Hydraulic clamp on fork truck permits handling packages without pallets. (Elwell Parker Electric Co.)

ered by storage battery and controlled by a walking operator. A motor on the forward wheels supplies power for hauling.

A powered hand truck should have a dead-man control so that brakes will be applied instantly when the operator releases the handle.

**Platform truck.** Used for hauling baggage, mail and packages at railroad stations and steamship piers and in industry for some jobs where loads cannot be palletized. Loading is by hand.

**Low-lift platform truck.** Platform elevates just enough for horizontal movement. It picks up loaded skids, moves them and sets them down without manual handling or use of other equipment.

**High lift truck.** This type may be fork, platform or special type. It has a lifting mechanism to permit tiering one load on another.

**Ram trucks.** This type has vertical uprights and elevating mechanism like a fork truck. It is normally equipped with a single ram for picking up coils, rolls, etc.

**Roll-handling trucks** for handling paper are equipped with a cable drum and two cables. Hooks on the cables hook over the ends of a rod which serves as an axle for the roll.

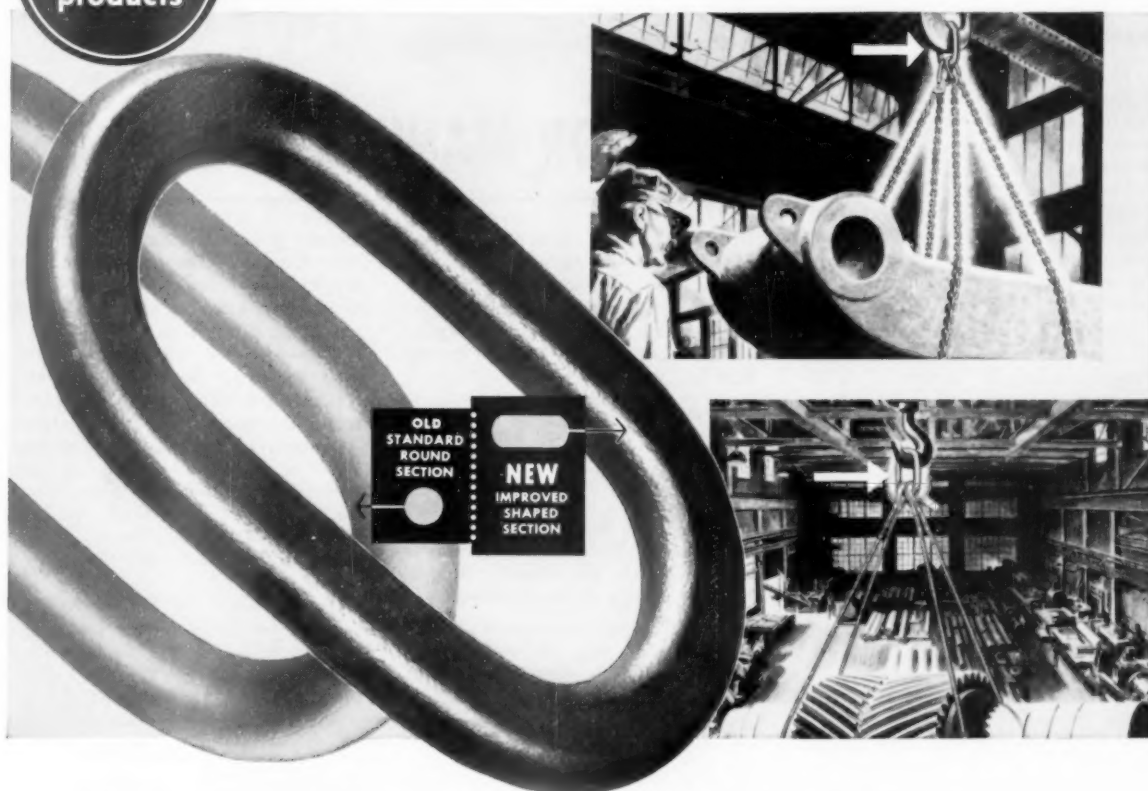
**Crane trucks** are equipped with boom, cable and drum. Hooks, spreaders and slings are used for moving heavy unit loads and objects too large to be handled on truck platforms or forks.



**ACCO**  
products

## ACCO Registered\* Slings—Wire Rope & Chain

THE STANDARD OF EFFICIENCY AND SAFETY



### New Master Link for Slings—Either Chain or Wire Rope— Holds Its Form Under Loads Up to 18% Greater

• Latest product of the continuing research behind ACCO Registered Slings is this new Shaped Section Master Link. ACCO's engineers found that by shaping the link—as shown above—they could give it more "dimensional stability"—a better "section modulus." Translated into layman's English this means that the new shaped link, without any increase in weight, will withstand deformation under loads up to 18% greater than a standard round section link will.

Just as shaping a quantity of metal into a structural I-Beam allows it to handle greater loads than it could as a solid beam, so does ACCO's Shaped Section Master Link give better performance under greater loads than a link with a round section.

The new shaped link is smoother and provides a greater factor of safety. It is a better and safer link.

It costs us more to make. But it will be offered on all ACCO Registered Slings—both wire rope and chain—at no increase in price.

#### AN EXTRA BONUS OF SAFETY

This latest technological advance adds an extra bonus of safety to ACCO Registered Slings.

Each component of an ACCO Registered Sling is made from the best materials procurable for its use. Each part must prove to have strength equal to or greater than the sling body. All hooks for ACCO Registered Slings are Magnaflux tested. Then

these components are assembled into slings according to carefully engineered designs that have proved themselves in rigorous field tests.

The completed sling is then individually proof-tested to twice the working load limit. Then and only then, is it awarded the coveted ACCO Registration Certificate and the identifying ring or tag.

#### SEE YOUR DISTRIBUTOR

ACCO Registered Slings are readily available from a distributor near you. If you don't know him write to our Bridgeport office for his name.

\*Trade Mark Registered

**ACCO**



**AMERICAN CHAIN & CABLE**  
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Atlanta, Boston, Chicago, Denver, Detroit, Houston, Los Angeles,  
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In Canada: Dominion Chain Co., Ltd., Niagara Falls, Ont.

**Better  
Value**

**Tractors and trailers** are used where large quantities of materials are moved relatively long distances, as at freight terminals and piers. Loading and unloading is done manually or by crane or other equipment.

## HAND TRUCKS

The two-wheel hand truck, designed for handling bags, drums, barrels, cartons, beverage cases, etc., comes in a variety of sizes and types. It can be equipped with brakes.

Hand platform trucks are available in several designs with capacities for 150 to 2,000 pounds. They are usually designed to be pushed by one of the end racks. They are suitable for short hauls.

**Hand lift trucks.** The load, supported on platforms or skids, is raised enough for horizontal movement and pulled by hand power. These are useful where loads are relatively light and distances short.

**Wheelbarrows** are useful for hauling and dumping bulk materials. They can be used where a two- or four-wheeled vehicle could not be maneuvered. Bodies of aluminum and magnesium alloys and rubber tires have made them lighter and easier to handle.

## BRIDGE PLATES

Movable plates for bridging the gap between loading platforms and

carriers are needed for both hand and power trucks. Bridge plates are usually of steel or magnesium or aluminum alloys.

The sides of bridge plates should be turned up at right angles or other means provided to prevent trucks running over the edge.

Handholds facilitate safe handling.

Bridge plates should have a high friction surface to prevent slipping of vehicles or persons. The plates should be designed so that when they are in position the ends will have substantial contact with the loading platform and the carrier to prevent rocking or sliding when in use.

# AIDS FOR MANUAL HANDLING

**LIKE THE** foot soldier, manual handling will never be completely replaced with mechanized equipment. Numerous accessories can make the work safer and easier, however, provided they are kept in good condition and used correctly.

**Hooks** are used for handling logs, lumber, crates, boxes and barrels where the object will not be damaged. Hooks should be inspected daily and kept sharp. If a hook is carried in the belt, the point should be covered. The worker should be trained to use the hook so that it will not glance off hard objects.

**Bars.** The point or edge of a crowbar should be kept sharp and position of hand and body should minimize the chance of pinching or falling if the bar should slip or the object move suddenly.

**Car movers,** not crowbars, should be used to move cars on steel rails. When two men are needed for the job, two car movers should be used. More than one man should not try to work with the same mover.

**Rollers** are used for moving heavy, bulky objects. A sledge or bar, not hands or feet, should be used to move rollers under the load.

**Hand trucks, wheelbarrows, and dollies** are on the borderline between mechanical and manual equipment. Even simple equipment should be inspected regularly and kept in repair. Axles should be kept well lubricated.

Repair and maintenance records should show the condition of each piece of equipment.

## USE OF HAND TRUCKS

The type of truck most suitable for the work should be used. No one type of truck is suitable for handling all types of loads.

On a two-wheeled truck, the center of gravity of the load should be placed well forward so that the

weight lies on the axle and not on the handles. Some two-wheeled trucks have brakes so that the worker need not hold the truck with a foot on the wheel or axle.

Two-wheeled trucks and wheelbarrows may be equipped with knuckle guards to protect the hands from jamming against obstructions.

Tongues of flat trucks may be provided with counterweights, springs, or hooks to hold them vertical when not in use. Otherwise workers should be trained to leave handles in a position that will not create a tripping hazard.

To decrease the hazard to feet, wheels should be as far under the truck as possible. Wheel guards may be installed on some types of trucks.

Four-wheel trucks should be pushed, not pulled, particularly when the truck is going down an incline.

## HANDLING SPECIFIC OBJECTS

Drums and barrels can be handled more safely on an incline with ropes or other tackle to control their motion. The drum or barrel should be snubbed with a rope, one end of which is securely fastened to the platform from which the object is to be lowered. The rope should then be passed around the drum and the load lowered gradually.

Sheet metal should be handled with leather gloves, hand leathers, or gloves with metal inserts. Bundles of sheet metal should be handled with power equipment.

Sheet glass should be handled with gloves or hand leathers, and wrists and forearms should be covered with long leather sleeves. A leather or canvas apron and guards to protect feet and ankles should also be worn.

Large panes of glass should be handled by two or more men, using canvas slings and padding to protect head, neck and shoulders. Where large panes are carried a considerable distance, an A-frame truck should be used.

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# WIRE ROPE

**HIGH TENSILE STRENGTH** and moderate flexibility qualify wire rope for heavy lifting and haulage and for supporting rigging. It is serviceable under varying weather conditions but it should not be exposed to excessive heat or corrosive substances nor dragged over abrasive surfaces.

In selecting wire rope, the following should be considered:

1. Size
2. Construction
3. Grade
4. Equipment on which rope is to operate
5. Handling, installation and maintenance of rope

## CONSTRUCTIONS

Wire rope is manufactured in a variety of constructions, each designed for certain service conditions.

In designating construction, the first numeral identifies the number of strands in the rope, the second, the number of wires in each strand. This is followed by a term describing the geometric arrangements of wires in each strand, e.g., 6 x 19 Filler Wire.

The 6 x 19 construction is the most generally useful. As the number of wires per strand increases, flexibility and reserve strength increase but ability to withstand abrasion decreases. A 6 x 7 construction has higher resistance to abrasion but less flexibility.

The core serves as a foundation for the strands. Three types of cores are used: (1) fiber; (2) independent wire rope, and (3) wire strand.

Fiber gives elasticity to the rope and has adequate strength for normal operating conditions.

Metal cores are used where maximum strength and minimum stretch are important; where heavy loads or overwinding on a drum causes ex-

cessive pressure of strands against the core, or temperature would dry out a fiber core.

**Type of Lay.** There are two general methods of laying up rope: (1) Regular lay, in which the wires in the strands are laid in the opposite direction to that of the strands in the rope, so that on the outside of the rope the wires lay approximately parallel to the rope axis; (2) Lang lay, in which wires and strands are laid in the same direction.

Regular lay rope is standard for most applications. It is easier to handle during installation and less susceptible to kinking.

Lang lay rope has good flexibility and high resistance to abrasion and fatigue.

Wire rope is made either right or left lay. In most cases it makes little or no difference which type is used. Right lay is standard.

## ROPE GRADES

Rope wires are usually made of the following materials and designated by their names. (Minimum tensile strengths are quoted from Federal Specifications RR-571 a.)

**Improved plow steel.** Has highest strength and toughness and most wear resistant properties. Most frequently selected for heavy duty service, as in deep shafts and on excavating machinery. Minimum tensile strengths, 218,000-244,000 psi.

**Plow steel.** Strength about 15 per cent less than improved plow steel. Serviceable for haulage, hoisting, logging and miscellaneous service. Minimum tensile strengths, 190,000-212,000 psi.

**Mild plow steel.** Combines toughness with pliability, making it capable of undergoing repeated impact stresses. Used principally for cable tool drilling. Minimum tensile strengths, 165,000-184,000 psi.

**Cast steel.** Where strength is not the controlling factor, its pliability is important in long fatigue life. Resistant to acid mine water. (Not listed in Federal Specifications.)

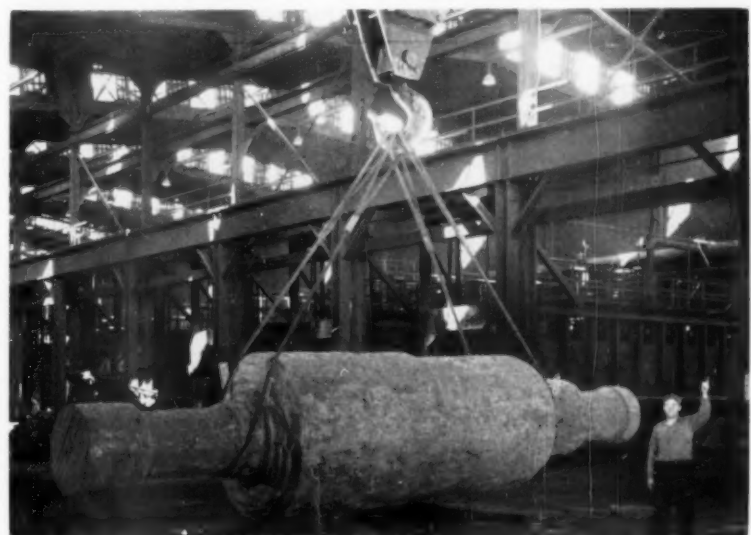
**Traction steel.** Used in hoisting ropes for traction type elevators. High resistance to bending fatigue and minimum abrasive action on sheaves and drums. Minimum tensile strength, about 160,000 psi.

**Iron.** Low tensile strength (about 70,000 psi.) but very ductile. It has been used principally in elevator service where it is being replaced by traction steel.

**Corrosion-resisting metals.** Where corrosion is a factor, stainless steel, bronze and monel metal are frequently used. All-metal ropes are preferred to fiber core ropes.

Stainless steel is used in marine operations on aircraft, and where rope is exposed to alkali, acids of an oxidizing nature (such as nitric), neutral brine, food products, and temperatures damaging to carbon steel ropes.

Bronze is slightly stronger than



Wire rope slings can lift industry's heaviest loads. This one is moving heavy press forgings. (Bethlehem Steel Co.)

## REFERENCES

### Wire Rope

**National Safety Council:** Steel Sinews; Safety Reprint Con. 5.

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**National Safety News:** Lifting Safely with Wire Rope; T. O. Aho, Nov. 1955. —You Can Depend on Wire Rope; Sept. 1954.

—How Safe Are Your Slings?; W. C. Richards, Aug. 1953.

iron rope. It is used frequently in marine service.

Monel metal is used where rope is exposed to marine atmospheres, acids of a reducing nature (such as sulfuric, muriatic and hydrofluoric), neutral brines, food products, pickling solutions, and aromatic chemicals.

Corrosion-resisting ropes are furnished in complete assemblies and slings with fittings attached. Temperature, humidity, nature and concentration of corroding chemicals should be considered in selecting equipment.

### PREFORMED WIRE ROPE

A preformed wire rope is one in which each individual strand, and at the same time each individual wire, is permanently formed into the helical shape it will assume in the finished rope. Advantages of preformed rope are:

1. Higher resistance to bending fatigue.
2. Greater flexibility.
3. Less susceptible to kinking and therefore easier to install.
4. More equal distribution of load on each strand and wire.
5. More resistant to whipping and vibration.
6. Hugs small drums better and winds more uniformly and smoothly.
7. Operates over sheaves with less rotation around its axis, with less wear on rope and sheaves.
8. May be socketed with less danger of unbalancing the lay of the rope below the base of the socket.
9. Does not unravel when seizings are removed from ends of rope.
10. When outer wires break through fatigue, they do not protrude or "porcupine." This reduces risk of injury in handling.

Since broken wires are less conspicuous in preformed rope, greater care is needed in inspection. However, broken ends separate slightly, permitting detection.

Strength and other qualities are the same for preformed and non-preformed rope of the same size, grade and construction.

### WIRE ROPE STRENGTH (% in rope)

Grades	Breaking Strength (Lbs.)
Iron .....	12,500
Traction steel .....	23,000
Mild plow steel .....	24,600
Plow steel .....	28,300
Improved plow steel .....	32,600

### WIRE ROPE SLINGS

Wire rope slings are widely used for heavy lifting. Wire rope should not be used, however, where there are sharp bends over an unyielding surface. Tension of outside strands may cause damage to the rope.

Where a load has sharp corners, pads should be placed between the load and the sling.

Maximum strength is obtained when all legs of the sling are vertical. The smaller the angle formed between the legs of the sling and the horizontal, the greater the tension on the legs and the less weight which can be lifted.

Selection and attachment of fittings have much to do with rope life and safety. Principal connections and attachments are:

- Babbitt or zinc socketed connections
- Wedge sockets
- Swedged attachments
- Thimble with clip connections
- Three-bolt clamp connection
- Spliced eye and thimble connection

When slings are to be used for special purposes the advice of the manufacturer should be obtained.

### CAUSES OF FAILURE

When wire rope fails to give the expected service, the reason is seldom a defect in the construction of the rope. Following are some of the more common causes:

1. Use of rope of incorrect size, construction or grade.
2. Allowing rope to drag over obstacles.
3. Lack of proper lubrication.
4. Sheaves and drums of inadequate size, causing short radius bends.
5. Overwinding or cross winding on drums.
6. Sheaves and drums defective or out of alignment.
7. Ropes jumping sheave flanges.
8. Effect of heat, moisture, or acid fumes.
9. Improper fittings.
10. Permitting ropes to untwist.
11. Kinking.
12. Severe overloads, reverse bends, and other excessive stresses.
13. Internal wear caused by grit penetrating between strands and wires.

### HOW TO ORDER

When ordering wire rope, the following information should be furnished:

1. Length.
2. Diameter.
3. Construction—Number of strands; Number of wires per strand; Arrangement of wires in strand, such as Seale, Filler Wire, etc.



Correct way of attaching Crosby wire rope clips. The U-bolt of each clip should be on the dead end of the wire.

4. Type of Fabrication—If preformed rope is desired, it should be specified. Otherwise, non-preformed rope will be furnished.

5. Finish—Galvanized finish should be specified if required. Otherwise bright rope is usually furnished.

6. Grade—Improved plow steel, Plow Steel, Iron, etc.

7. Lay—Regular Lay Right Lay will be furnished unless otherwise specified. Lang Lay or Left Lay is furnished on request.

8. Core—Specify fiber core, independent wire rope core, or wire strand core.

9. Lubrication—Type of lubricant should not be specified unless there are unusual service requirements. Each construction and grade of rope is treated with a lubricant adapted to that particular rope for a wide range of service conditions.

10. Use for which rope is intended.

### WIRE ROPE LUBRICATION

All wire rope should be treated at regular intervals with a lubricant to keep it pliable and to prevent rust. Pound for pound, wire rope probably has more bearing surface (inside the rope) than any other equipment, so the importance of lubricating is obvious.

Idle wire ropes are most susceptible to damage by rust. It is important to see that they are well lubricated when not in service.

The best lubricants are those furnished by manufacturers and dealers especially for lubricating wire rope.

Lubricants which meet specifications are free from acids and corrosives and have good penetrating qualities. They do not cake, gum or ball-up if contaminated with dirt or metal particles.

Lubricant may be applied with a brush. It should be brushed on slowly, carefully and frequently because it is difficult to get complete coverage and penetration.

A more effective method is a simple three-sheave trough. It should be firmly fixed near the reel or drum and the rope run through the lubricant not faster than 30 feet a minute.

# Tuffy SLING NEWS

Vol. 1

Published Monthly in Leading American Trade Magazines by Union Wire Rope Corp.

No. 5

## NEW FERRULE TEAMS UP WITH Tuffy FABRIC FOR BETTER SLINGS

Strength of Machine Braided Fabric Equaled in Eye-Splice

### SPEEDS UP SLING WORK

See for yourself at your Tuffy distributor's how this new, steel ferrule on all Tuffy Slings is streamlined with no rough edges to injure hands or catch on loads.

The new ferrule on all Tuffy 9-part machine braided wire fabric slings is the most important development in slings since Tuffy made history by introducing machine braided wire fabric. Here's why:

1. This new ferrule, squeezed around the tucked eye splice of Tuffy Slings, under pressure, creates a force of friction so powerful that a pulled out splice is virtually a thing of the past.
2. Because the ends of the ferrule are swaged flush with the machine braided strands, there are no projections left to snag on loads or injure hands. As a result, handlers can work much faster and with greater safety—doing more in a shorter time—when they're working with flexible, Tuffy Slings.



3. You pay nothing extra. The new Tuffy eye-splice with pressed on metal ferrule gives you a far better Tuffy Sling—but at the same reasonable price.

As always, Tuffy Slings are extra flexible and kink-resistant. It's almost impossible to kink a Tuffy. But if it does kink, you can always straighten it without materially damaging the fabric. Everyone who has used the new all-metal pressed on ferrule agrees that it adds a great deal to the service life of Tuffy machine braided wire fabric slings.

### Your Tuffy Distributor Can Save You Money

Tell him what your future requirements in Tuffy Slings and Tuffy Hoist Lines are likely to be. He'll tailor his stock for you to draw against. You'll save the time, space, and cost of maintaining your own inventory.

### FACTS ON FERRULE, SLINGS, FITTINGS, IN FREE NEW TUFFY SLING HANDBOOK

This new 60-page Sling Handbook gives you complete information (charts and rated working loads) on a larger line of factory-fitted slings. It tells you how to use versatile Tuffy Slings on dozens of different jobs. It shows you how the new Tuffy metal ferrule is pressed on the eye splice to make Tuffy machine braided wire slings safer and faster to work, and it shows you the most advanced sling fittings available. On top of all this, it contains a brand new engineer's handbook and a valuable rigger's manual.

If you buy, use or specify slings—if you are concerned with shop safety, efficiency, and long service life—you need this fully illustrated, comprehensive Tuffy Sling Handbook. Mail the coupon to us now for your copy of the new edition. No obligation.



**union Wire Rope corporation**

Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand.  
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# CHAINS and CHAIN SLINGS

**BECAUSE** they combine strength, flexibility, and resistance to abrasion, heat, shock and corrosion, chains and attachments made according to modern standards are suitable for heavy hoisting and haulage jobs.

Specifications for various types of chain have been compiled by the American Society for Testing Materials. Safe loads may be determined from tables in the manufacturers' handbooks.

**Safe working load** means the maximum load which should be applied to a chain in direct tension.

**Breaking loads** are of no practical interest to the user. They are often misleading and may encourage unsafe practices.

**Proof test** means the actual test in pounds applied to the chain and attachments before leaving the factory. Proof test figures should not be considered as safe working loads.

These tests are followed by visual link-by-link inspection by experienced inspectors.

## TYPES OF CHAIN

Conditions under which chain will operate should be considered in selecting types. When ordering, the manufacturer should be consulted about applications.

Factors to be considered are: impact loading, bumpy craneways, rapid lifts, sudden stops, heat, corrosive atmospheres, and unnatural strains.

Following are types commonly used in industrial operations:

**Wrought iron chain** (crane or dredge) has high resistance to shock fatigue and corrosion. This chain has close links and is used for slings, hoists, cranes, power shovels, and marine purposes where human life and property depend on its endurance.

## REFERENCES

### Chains

**National Safety News:** How Safe Is That Chain Hoist? E. S. Moorhead, Feb. 1956.

—Inspect Those Chains; H. F. Reid, Jr., May 1954.

—No Mystery About Chain Failures; N. J. Gebert, Nov. 1953.

—Chains That Won't Let You Down; Jess Hogans, Jan. 1953.

—Safer Lifts; S. N. Morrison, Nov. 1950.

**Welded steel chain** (low carbon) is made in three common types: Proof Coil, BBB, and Steel Loading.

Proof Coil is used principally for towing, binding, logging and similar operations. Links are comparatively long. Proof coil chain is not suitable for lifting or for slings.

BBB Coil is a higher grade than proof coil, with safe working load approximately 25 per cent greater. Shorter links give greater flexibility. BBB coil chain is not suitable for lifting or for slings.

Steel loading chain has a tensile strength approximately 50 per cent higher than BBB. It is used in the logging industry for binding and loading logs and in oil fields for handling pipe and heavy equipment.

**High test chain** (high carbon) is heat-treated to give it high tensile strength and resistance to impact loads. Tensile strength is approximately double that of ordinary steel chain. Ductility is moderate. Where resistance to wear is most important, it permits use of smaller and lighter chain.

**Alloy steel chain** (general purpose) has exceptional strength for weight and size. It is resistant to some types of corrosion. It is frequently used where maximum tensile strength and resistance to abrasion is required, with reasonable resistance to impact.

**Special purpose alloy chain** is considerably higher in cost and is used on high temperature operations and where resistance to the action of corrosive substances is required.

Stainless steel is high in tensile strength, fair in elongation, but low in impact resistance. It is used chiefly for ornamental installations and nitric acid pickling.

Monel has fair tensile and impact strength and elongation. It is resistant to sulphuric and hydrochloric acid solutions but not to nitric.

Bronze has good elongation and fair resistance to impact, but low tensile strength. It is resistant to sulphuric and hydrochloric acid solutions but not to nitric.

Specialized types of chain have been developed for certain industries, such as those used in marine operations.

Finishes are sometimes added to chains to provide added protection



Jib crane with hand-operated hoist and special hook chucking heat-treated gear on a bore-grinding machine. (Westinghouse)

from corrosion or for decorative effect.

**Nickel alloy steel hoisting chain** is approximately twice as strong as iron chain of the same size. It meets ASTM elongation requirements for iron crane and proof coil chain. It can be used over a wider range of temperature and is relatively immune to failure resulting from fatigue stresses and cold working of the metal.

Impact resistance in heat-treated alloy steel chains does not increase in proportion to the strength of the chain. Under full working load they will fail under impact before a fully loaded wrought iron or heat-treated carbon chain will fail.

Because of wear and impact factors, some chain manufacturers recommend that link size of sling chains should not be greatly reduced when using alloy steel chains of high strength as compared with wrought iron chain. Longer life and increased factor of safety justify increased cost.

**Storage.** When not in use, each chain should be hung on a rack or placed in a neat pile on a dry floor or platform where it will not create a tripping hazard. Exposure to corrosive fumes or liquids should be avoided.

**Safe Loads.** Some plants stamp on a metal tag attached to each chain the safe vertical load which may be lifted with that chain. A better way is to stamp the safe load, or a reference number, on the ring or hook. Stamp marks should not be placed on links where they might form points of weakness.


The useful life of all material handling equipment should be carefully monitored.  
—To page 227



# LOWERY *Slings*

## LEAD THE FIELD IN SAFETY AND PERFORMANCE

*Here's proof you can see*  
**IN A SLING YOU CAN TRUST**



This is an actual untouched photograph of Lowery Brothers Tapered swage fitting that is used on Lowery Brothers slings to allow free passage under and around a load to be hoisted.

It is practically impossible to hook or snag this swage fitting on anything. This is due to the exclusive taper on both ends of the swage fitting.

By using Lowery Brothers swaged slings you are eliminating the hazards of hand punctures and scratches due to the fact that the hazards are covered with our swage fitting. This allows your workmen to handle the sling freely without worrying about their hands being injured.

Why you should use a wire core sling for economy and for strength:

Wire rope slings made from 6 x 19 or 6 x 37 wire core will give approximately 7% additional strength to the sling. As you know, hemp core is actually a filler and lubricator, but so is the wire core . . . and wire core will hold its shape and will not crush nor break. The bearing point is where slings usually flatten. The hemp core gives way and protrudes from between the strands. Then the strands separate and loosen and only three strands will take all the wear, thus shortening the service of your slings.



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Examine the cut below, showing a Lowery Brothers swage loop or eye that has been cut into. You will note the solid mass of steel. The wire core also is in the swage, assuring you of the finest sling you can buy at any price. So get the best . . . get Lowery Brothers slings.



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# FIBER ROPE

**TWO QUALITIES** make flexible rope suitable for block and tackle work, life lines and lanyards, suspended scaffolds and stagings, and in marine operations:

- It is flexible and easy to tie and splice.
- It can be handled manually.

Many types of fibers have been used for ropes. The best materials have good tensile strength and resistance to weather and abrasion.

For heavy loads where fiber rope of adequate strength would be too bulky, wire rope is more serviceable.

Fiber rope should never be exposed to high temperatures or to acid splashes or fumes. Sharp bends should be avoided. Where a sling passes over sharp edges, pads should be used to protect the rope.

Rope should not be kept in stock for long periods. Even with careful handling and favorable storage conditions, vegetable fibers deteriorate with age. When rope is used at infrequent intervals, its age should be considered in its use and retirement.

## NATURAL FIBERS

**Manila fiber** is standard for tensile strength and durability. A good grade of new, clean manila rope is hard but pliant, yellowish in color. It has a smooth almost silky feel.

**Sisal** is the next best fiber. Strength varies from 65 to 80 per cent of manila. Sisal rope has a yellowish color, with sometimes a slight greenish tinge. It lacks the gloss and smoothness of good manila. Sisal fibers are stiff with a tendency to splinter.

**Mexican sisalana** (henequin) lacks the strength of high quality sisal but has been used to some extent during shortages of better grades of rope. Strength is about 60 per cent of manila.

**American hemp** fiber is much softer than manila. It has a dark

gray color. It is not highly resistant to abrasion but when tarred it will give fair service on some jobs. Strength is about 80 per cent of manila.

**Jute and cotton** are not recommended for handling material or other uses where strength and durability are needed. Strength is about 50 per cent of manila.

## SYNTHETIC FIBERS

Ropes of synthetic fibers are coming into wider use. Their higher cost has restricted their use to certain specialized operations.

**Nylon** has a high rating for tensile strength, toughness, flexibility and durability. It is easy to handle.

Nylon rope has a higher tensile strength, wet or dry, than natural fibers and does not show marked deterioration when frozen. Melting at 480 F., it can be readily destroyed by fire but it does not ignite and burn with flame. It is resistant to rot, mildew and alkalis but is damaged by acids.

**Glass fiber.** High strength when dry but low resistance to flexing and abrasion. Poor performance when wet reported.

**Saran.** Resistant to rot and many chemicals. Practically unaffected by aging, direct sunlight and moisture. Only moderate resistance to abrasion and temperature.



Fiber rope deteriorates with age as well as with use and frequent inspection is necessary for safe service. (Trinidad Leaseholds Ltd.)

## CARE OF ROPE

New rope should be thoroughly inspected throughout its length before being placed in service. The rope should be uncoiled by laying the coil on the floor with inside end down; then reach down through the center of the coil and pull this end up, unwinding the coil counter-clockwise. If the rope uncoils in the wrong direction, the coil should be turned over and the end pulled out on the other side.

Rope loaded over 75 per cent of its breaking strength will be permanently injured. Damage can be detected by examination of inside threads which will be broken in proportion to the overload.

Kinking is highly destructive to rope. It may cause failure when the rope is again put under strain. Kinking is more likely to occur when rope is wet.

Sometimes ropes become kinked after use. One method of removing these kinks is to open up the coil and recoil left-handedly. When the coil is completed, the free end is brought through the coil and the rope is then coiled right-handedly.

Uncoiling the rope and stretching it out in a single length is another method of unkinking where space permits.

Rope should be stored in a dry place where it will not be exposed to high temperature and where air may circulate through the coils.

Rope deteriorates very quickly if it becomes saturated with water and is not properly dried. Alternate wetting and drying will also cause rapid deterioration.

When lengths of rope must be joined, they should be spliced, not knotted. A well-made long splice will retain up to 90 per cent of the strength of the rope; a knot only 50 per cent.

**Inspection** should include examination of the entire rope for wear, abrasion, broken or cut fibers, displacement of yarns or strands, discoloration or rotting.

To inspect the inner fibers, the rope should be untwisted in several places to make sure the inner yarns are bright, clear and unspotted.

Rope should be replaced when it has lost its feel of pliability or stretch, or when the fibers have lost their luster and appear dry and brittle.

Wives who encourage their husbands to pursue interesting hobbies rarely have to worry about their pursuing blondes!

## REFERENCES

### Fiber Rope

**National Safety Council:** Safe Loads for Manila Rope Slings; Data Sheet D-259.

—Sisal Rope; Data Sheet D-261.

**National Safety News:** Facts About Fiber Rope, June 1955.

**Miscellaneous:** Manila Rope; Federal Specifications TR601.

# So Strong



## *... yet so easy to handle*

For many kinds of lifts, it's hard to beat the Bethlehem braided sling with choker hook.

You can always be sure of high strength in this sling. It's so flexible, too, and it hugs the contours of the load so snugly. And, with that choker-hook attachment, it's so easy to use. Just wrap it around the load and quickly drop the loop over the hook.

But if your loads can be handled to

better advantage with other types of slings, Bethlehem can always meet your needs. There are many shops that prefer grommets. Some find bridles more suitable. Some are partial to single-rope slings with steel collars. Requirements differ, and Bethlehem makes *every* kind of wire rope sling, for every industrial application.

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Strand rope, our top grade. They are made with the craftsmanship that comes of long experience. So when it's slings you're after, call us! We'll gladly furnish any type you want — standard or special.

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# BETHLEHEM STEEL



# HOISTS and PORTABLE CRANES

A **HOIST** is a mechanical device, suspended from overhead, used for raising or lowering loads through a vertical plane. Common types include:

1. Block and tackle
2. Hand chain hoist
3. Electric hoist
4. Air-operated hoist
5. Portable floor cranes
6. Jib cranes

**Block and tackle.** Blocks threaded with fiber or wire rope are used for raising and lowering scaffolds, hoisting objects, and other industrial purposes.

When used to lift heavy materials or to hold loads suspended, as on heavy duty scaffolds, wire rope is more serviceable than fiber rope. Wire rope is too stiff for manual handling and requires a winch for operating.

**Hand chain hoists** may be used where overhead cranes cannot be installed on account of lack of head room. They also handle heavy pieces

at machines. One hoist may handle the work at several machines.

Steel is recommended for load-sustaining parts. It withstands sudden shock better than cast iron and is much lighter in weight for equal strength. Chain should be of best quality steel and should be welded.

Each hoist should be equipped with a braking device which automatically locks the load when hoisting is stopped.

Chains and sheaves should be lubricated at intervals, depending on atmospheric conditions.

**Electric hoists** range in capacity from  $\frac{1}{8}$  ton to 20 tons. They are faster than hand hoists and less fatiguing for large loads. The light duty hoist uses link chain for lifting. The heavy-duty type uses wire rope.

Limit stops prevent the hoist from traveling too far in case the operating handle is not released in time.

**Air hoists** operate on compressed air. They are used where sparks

from electric equipment might be a hazard, or where smoothness of operation is important. The air hoist is limited in travel because of dependence on the air lines.

**Grabs, grips and tongs** of several types have been developed for use with overhead handling equipment, such as cranes, monorails, hoists, etc. Some can handle a variety of objects while others are more specialized.

**Portable floor cranes** or hoists are mounted on wheels and can be moved either by hand power or under their own power. These raise and lower loads in a vertical line. They will not rotate around a fixed point.

Portable cranes are useful in plants where overhead belting, shafting, etc., prevent the use of overhead cranes, and where service is not frequent enough to justify more expensive equipment. The lifting mechanism may consist of a winch with wire rope and block, or a chain hoist, operated by hand or by electric power.

Hoists operated by electric power should be grounded to prevent shock in case of short circuit.

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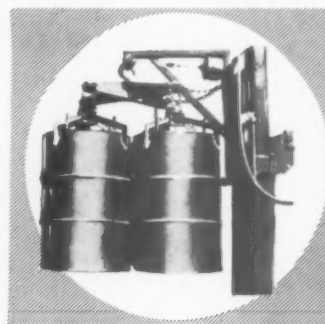


BLOCK



HEADACHE BALL

PRODUCTS OF

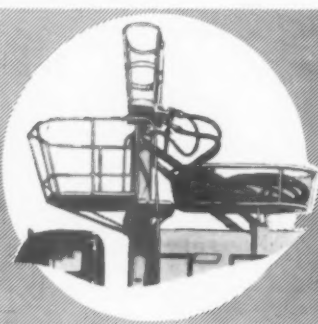


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Jib cranes lift, lower and rotate loads within the circle covered by a rotating arm or jib upon which runs a trolley. The jib is usually supported from a wall or column. A hoist, hand-operated, air or electric, is suspended from the trolley. A substantial stop at the end of the jib arm prevents the trolley running off.

## CONVEYORS

MASS PRODUCTION has been made possible largely by conveyor systems planned to fit manufacturing processes. They are used in the assembly of articles, moving parts or materials from one machine operation to the next, moving parts through painting, drying, baking, heat treating and other processes, and from one floor to another.

Conveyors can operate under conditions where it would be dangerous or uncomfortable for men to work. They also eliminate many manual handling operations, with opportunities for injury.

A conveyor system costs more than mobile equipment but it will often save more where material flows in large quantities in fixed paths.

Conveyors are divided into seven basic types: (1) roller (2) belt (3) chain (4) cable (5) monorail (6) screw (7) pneumatic.

Most operations need power-driven conveyors but gravity conveyors of the chute and roller types can be used effectively where successive operations are conducted on lower floors.

Stile-type crossover bridges with handrails should be placed where needed along the conveyor line.

Overhead conveyors should have side boards along edges and at turns, also screen guards under high runs, to protect workers and equipment from falling material.

Portable conveyors, mounted on wheels or casters, can be moved where needed for short jobs. They are made in roller, belt and bucket types for handling packages and loose materials. They are used in warehouses, docks, shipping platforms, coal yards and sand and gravel pits.

Both power-driven and gravity types are available. The connecting cord should be a four-conductor in case of three-phase power, the fourth wire being grounded in all plugs and receptacles. The cable should be arranged so it cannot be run over by vehicles and its condition should be checked frequently.

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Rush Bulletin 13 giving all data on Taylor Made Alloy Steel Chain.

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# Elements of Safe Handling

**STRIPPED TO** essentials, materials handling is the movement of objects in any combination of three space dimensions. The objects are variable in weight and size. The movement may be in the horizontal plane, in the vertical plane, or in a combination of the two.

From the safety point of view, the problem is prevention of sprains, strains, back injuries, hernias, contusions, and fractures. That is accomplished by:

- Use of mechanical handling devices where possible.
- Training operators of this equipment.
- Training men who must handle objects with their muscles in the safest and least energy-consuming methods.
- Assignment of men physically fit for such jobs through pre-employment examinations and physical demand studies.

**Manual movement.** When the object is to be moved manually, the important factor is the weight of the

object. Height to be lifted and distance to be traveled are also important, and conditions encountered in lifting and carrying will bring about exposures that cannot always be predicted.

**Mechanical movement.** Height to be lifted and distance to be traveled are usually the important factors in accident exposure, since mechanical equipment is provided to lift and propel the weight. Hence, the greater the distance the machine travels with its load, the more likely it is to drop the load or collide with other objects or with persons.

## Exposures in Manual Handling

- Lack of appropriate lifting or transporting devices. (Simple equipment is often needed for manual handling.)
- Showing off—over ambition on the part of either worker or supervisor on lifting jobs.
- Incorrect lifting or carrying techniques.
- Attempting to lift weights beyond the worker's capacity.
- Lack of coordination among workers lifting together.
- Cluttered aisles, floors, and stairs.
- Failure to use equipment provided.

## Exposures in Mechanized Handling

Mechanized handling equipment also poses serious safety problems. When such devices are used, however, strains are minimized while falling object and collision accidents, with crushed hands and feet, may increase significantly.

Injuries from operation of mechanical devices may usually be traced to the following:

- Objects falling from carrier.
- Inadequate training of operators.
- Faulty plant layout.
- Horseplay.
- Devices inadequate for the job.
- Failure to use available equipment.
- Poor housekeeping.
- Excess handling between operations or at work stations.

Every time any object is handled, by manual or mechanical methods, there is an exposure to accident.

## Organization for Handling

Purchase of an industrial truck or some other handling device is not sufficient to bring any significant im-

provement in accident experience. An organized plan is necessary, covering the following:

1. Study accident-occurrence data.
2. Determine location and types of accidents.
3. Inspect conditions and study causes of accidents.
4. Correlate accident data and inspection findings.
5. Prepare management report.

## 1. Study Accident Data

First step in the analysis of materials-handling problems is the study of accident occurrence data to isolate materials-handling accidents. Each plant's experience is different and there are no fixed rules for this procedure.

Each plant should keep comprehensive accident records. Record keeping need not be elaborate or costly. For each accident, record: (1) date (2) name of injured (3) age and sex (4) location (5) description of operation (6) name of supervisor (7) cause and nature of injury.

A significant period—at least nine months—will give an accurate picture of the exposure. If less than 100 disabling injuries are recorded, a review of first-aid cases will often reveal minor material-handling cases that could have been serious.

The cause of the accident, rather than the result, should be considered. For example, accidents may be classified as dermatitis or falls on oil-soaked floors. The actual cause may be handling oil-soaked materials in leaky tote pans.

## 2. Locate and Determine Types of Problems

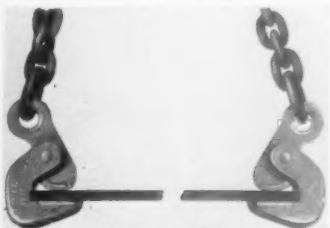
Next step is the study of materials-handling cases segregated from the total to determine locations and types of handling exposures. Accidents may be grouped by:

- Department
- Production line
- Shift
- Machine or operation
- Type of material handled
- Equipment used

Such a study may not be necessary or practicable. Routine inspection will often reveal situations and procedures that have not yet resulted in accidents. If extensive changes in techniques or expensive mechanized equipment are recommended, improved accident experi-

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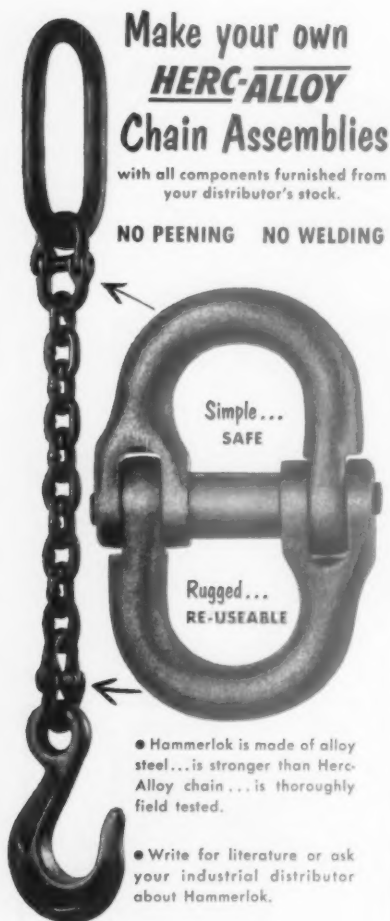
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ence is just as good a talking point as savings in handling costs.

### 3. Inspection and Study of Causes

Each accident or exposure should be evaluated on the basis of careful study of four items:

- Plant layout
- Practices and procedures
- Housekeeping
- Methods

**Plant layout.** Poor layout may cause unnecessary handling. Inadequate aisles and storage space cause congestion and poor housekeeping. Such conditions are usually beyond the control of the supervisor.

Efficient plant layout minimizes manual handling and reduces interference of men and materials in movement of stock in process.

**Practices.** A study of each operation may reveal unsafe practices or lack of proper instruction. More training may be necessary. Misuse of or lack of understanding of the use of equipment often results in accidents. Definite procedures in the use of industrial trucks, hoists, cranes, conveyors, etc., may be necessary. Safe lifting methods, horseplay, and showing off also need attention.

For training in lifting methods, training films are available. Safetygraphs produced by the National Safety Council are good for training small groups. Robots which show the physiological effects of lifting methods can be used for effective demonstrations.

**Housekeeping.** Poor plant layout is not the only cause of poor housekeeping. Lack of aisle maintenance or supervision of storage of materials within aisle boundaries results in congestion and disorder. Adequate racks and bins for raw stock and finished parts improve housekeeping.

Defective and poorly maintained floors cause spillage and result in accidents classifiable as materials handling. These conditions are usually easy to control but often go unnoticed.

**Methods.** When studying handling methods, look for items that have a bearing on possible accident sources. Two or three-man lifts, excessive handling between operations, inadequate handling equipment and unnecessary handling at work stations are clues.

Compilation of a process or operation chart for each work station or each unit of handling equipment may prove helpful. A methods study of each operation with excess handling

and possible hazards noted will reveal exposures that may be overlooked in visual inspection. Such a study may be concentrated at a single machine or operational cycle, or it may include movement of material from one location to another.

Once the facts are on hand, the engineering procedure of elimination, combination, change of sequence or simplification through mechanization can be used to minimize exposures.

### 4. Correlation of Data

Facts and figures are now on hand to prove the existence of exposures as indicated by accident experience.

In submitting recommendations to management, two important facts must be remembered. First, corrective measures must be considered from an economic standpoint. Are extensive changes warranted, not only from the accident point of view but also from the standpoint of available capital, effect on production, and overall operating efficiency? In many cases a comparatively low cost device or method will improve the situation.

Where the problem appears to warrant extensive changes in plant layout, or expensive equipment, the presentation must be thorough. Usually it will be necessary to justify extensive changes with factors other than safety. However, the protection of employees is often the factor that decides the purchase.

### 5. Preparing Reports

The final report for top management should expand on and interpret the facts compiled to do an effective selling job for safer conditions. Charts and graphs may be used to present the data in condensed form. The report should include a summary of the survey and the engineer's recommendations.

A report will be most effective when it offers several solutions to a problem.

### When Handling Glass

Handling glass is no work for a beginner. The glazier's safety problems are many, and injuries from glass can be severe. Opportunities for injury are found in:

- Lifting and carrying
- Scaffolds
- Grinding edges
- Etching glass
- Sandblasting glass
- Warehousing and packaging

Because injuries from glass can be severe, safe practices are more im-



portant in glass handling than in many other occupations.

**Lifting and Carrying.** The sharp edges and fragility of glass panes makes it necessary for the glazier to observe safe lifting and carrying rules.

Use right techniques in picking up and carrying glass.

With a small, light pane that can be easily handled by one man, use one hand at the top edge to steady it, and hold the bottom edge in the palm of the other hand—with the palm turned up and away from you.

Never carry glass panes under the arm. If you do so, and fall, you could easily sever an artery or puncture a lung.

Small sheets of glass may be carried in one hand, the bottom edge held in the upward palm, the top edge resting on the arm or shoulder. But again, never under the armpit.

Both the weight and size of the glass must be considered. If the size is large, several people may be required to handle the sheet, even if it is light.

Rubber laps (mats) are commonly used for handling glass. Gloves are not recommended for this purpose.

Big pieces should be lifted by grasping them at the side if possible—not from the bottom if that can be avoided, because lifting from the bottom may cause back strain.

For very big pieces of glass, carrying straps should be used.

Any large glass pane should be handled by at least two men, and the men should be protected at the head, neck, and shoulders, by canvas sleeves and padding.

If glass panes must be carried more than a short distance, use a truck crane.

Of course, in carrying any glass—walk carefully and watch your footing.

In bad weather, especially in wind or rain, more men than usual will be needed to handle glass.

On rainy days, make sure the area of the glass to be handled, and the rubber laps used in handling, are all completely dry before picking up glass.

Suction cups are frequently used for handling glass. However, there is one thing to guard against—if there is any dirt in the cup or on the glass, there will be leakage of air, and the suction cup will not hold.

Suction cups are mainly used to handle glass where it would be awkward to handle it by the hands alone—or where you cannot get at it easily.

One cause of serious injuries is



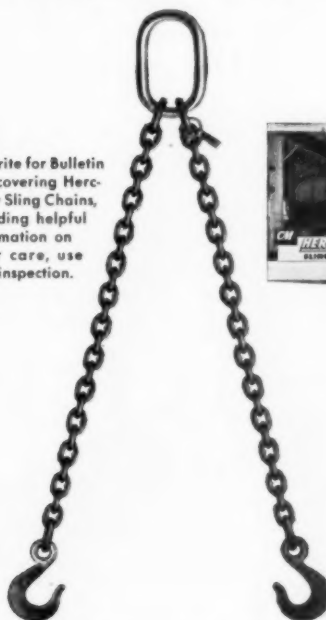
# HERC-ALLOY

## SLING CHAINS

● Herc-Alloy is the only exact-size alloy chain on the market. This uniformity gives you a lighter and easier-to-handle chain without any sacrifice in working load limit.

● Herc-Alloy, the original alloy steel chain, is available in running lengths as well as in all types and sizes of slings made to customer specifications.

● Write for Bulletin 100 covering Herc-Alloy Sling Chains, including helpful information on their care, use and inspection.



● CM also produces a complete line of chain attachments and welded chain of all types including stainless steel and bronze.



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the unsafe practice of tilting through a stack of panes to pick up a required piece.

The panes of glass should be moved over one by one, unless there is some safe mechanical means of preventing tilting or falling.

### Waterproof Covers

Waterproof covers are often needed to protect material and equipment against water damage in case of fire.

They are also useful for other emergencies, such as breaks in piping or when rain enters through broken windows or torn roofing during a windstorm.

Waterproof covers are especially useful in buildings where machinery, equipment or stock is readily damaged by water. This includes textiles, paper goods, hardware, foodstuffs, dry chemicals, leather goods, furniture, and other high-value materials. Areas in multi-story buildings where floor leakage

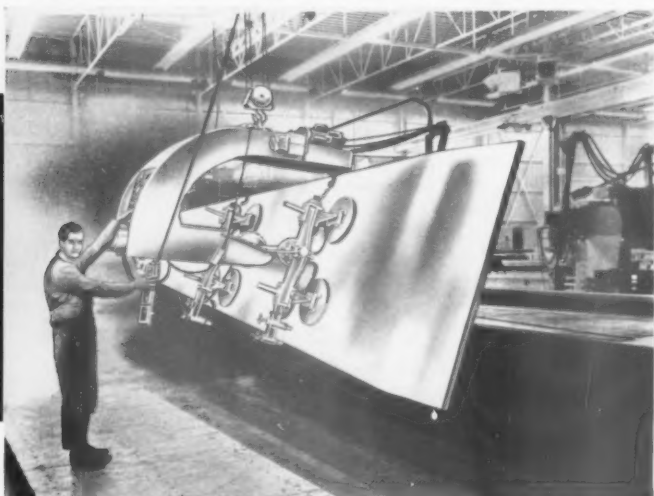
is likely should have waterproof covers.

Approved covers of rubber-coated or chemically-treated water-resistant canvas come in sizes up to 24 by 36 feet. They will last for years if stored away from heat. They should be refolded regularly to prevent cracking along the folds.

Vinyl plastic sheeting is used for some purposes. These covers are non-conductors of electricity and transparent enough to see the work. They are sometimes used by public utility companies for protecting linemen's repair work. They are also used for covering boats and trucks and for other specialized uses.

Watchmen and responsible plant employees on all shifts should be instructed in prompt use of covers.

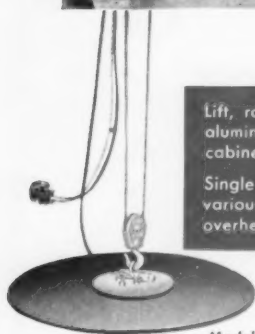
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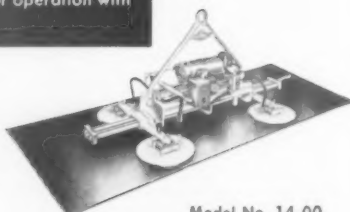


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**Model No. 14-00**

4-Cup Littell Sheet Lifter handling sheet steel. Adjustable cup centers from 18"-24" in width; 36"-60" in length. One man operation.

### Pile Right for Safe Storage

Proper storage of materials, tools, and parts is simply good housekeeping, and good housekeeping is common sense arrangement of all the items that go into an operation.

There are two main points to remember: Items must be piled and arranged so that (1) they can't fall over to damage and (2) they're readily accessible and can be easily handled.

Pile material so it won't fall on somebody, and store it out of the way of traffic. Pick a storage spot that doesn't create a hazard for plant traffic or require that heavy traffic lanes be crossed to reach it.

For example, don't pile lumber in such a place that you continually have to cross a heavily traveled plant roadway to get to it. Pile it out in the open, with access from all sides, where the boards can be handled easily.

Seven important points are:

1. Give each pile a firm foundation, and start it right.
2. Don't pile material too high for safe lifting and handling.
3. Allow ample passageways. Observe clearance rules at aisles, sprinkler heads, and railroad tracks.
4. Never obstruct the path to fire-fighting equipment. Keep fire doors clear.
5. Cross-tie tiers, when possible, so they support each other.
6. When there is danger of the pile being insecure, interlock the tiers with long boards.
7. When piling material in buildings, learn the safe load limit of that particular floor and observe it.

**F. J. LITTELL MACHINE CO.**  
**AIR-VACUUM DIVISION** • 4165 RAVENSWOOD AVENUE  
CHICAGO 40, ILLINOIS

## Chains

—From page 216

ding equipment, particularly rope and chain, is shortened by overloading, jerking, and neglect of maintenance.

### CHAIN SLINGS

Slings should preferably be purchased complete from the manufacturer. All attachments should be made to proper dimensions and of material specified for various uses. An ample factor of safety should be provided.

When a sling requires repair it should be sent to the manufacturer.

Rings and hooks are as important as the chain and should receive the same attention in inspection and maintenance.

A hook bent by overloading should be replaced. The stress of bending weakens metal so that its strength cannot be restored by repairing.

### Industrial Truck Is 50 Years Old

The first powered industrial truck ever manufactured will be displayed by The Elwell-Parker Electric Company at the 1956 Materials Handling Exposition to be held in Cleveland's Public Auditorium June 5-8.

The truck, now on permanent display at the Ford Museum in Dearborn, Mich., was produced by Elwell-Parker in 1906 for the Pennsylvania Railroad. Elwell-Parker, which this year celebrates its 50th anniversary of industrial truck production, will return the truck to Ford at the completion of the Exposition.

In contrast to the earliest truck model, Elwell-Parker will keynote its exhibit with a display of attachments for handling loads without the use of pallets or skids. More than a dozen trucks will be on exhibit, including five new models. A large demonstration area will be provided for actual operation of the trucks under simulated plant conditions.

### Crossover Bridges

Where loading docks are separated by railroad tracks, crossover bridges are needed. Some are of the draw-bridge type; others are mounted on four pillars that can be raised or lowered quickly by push-button control.



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## Equipment for Handling Corrosive Chemicals

Acids, alkalis and other corrosives require a variety of specialized handling apparatus, also protective garments for employees. Devices include:

- Buckets
- Dippers
- Funnels
- Pitchers
- Pumps
- Carboy inclinators
- Bags of padded, impermeable, acid-resistant material for carrying bottles of corrosive liquids.

Materials used for equipment include rubber, neoprene, stainless steel and several types of plastics. Materials vary in their resistance to chemicals, but manufacturers can recommend equipment for specific uses.

## Power Truck Operation

Which end of an industrial power truck is the front?

Most manufacturers call the platform part of the truck the front, and many users follow the same practice. Points in favor of this method of operation are:

- The operator is facing his controls and can act quickly in an emergency.
- He can watch the load on the platform better in negotiating narrow passageways and aisles.
- He has a better chance of escape in case anything goes wrong.

Advantages of riding ahead of the load are:

- The operator will be more careful to avoid hitting anything because injury is more likely to occur.
- He can see ahead much better.
- He can negotiate corners and have a better clearance. He is in a better point of observation, particularly at blind corners.

Manufacturers have varying ideas of what controls should be used, and, consequently, in some plants, the operator may be confused because he is required to operate a truck with one type of control and then change to a truck with a different system.

An important point is standardization of the warning signal button. Some trucks use a foot button, some a finger button, others a button which the operator depresses with his knee or thigh.

An operating platform guard is necessary. This may be merely a bumper type guard, a higher guard



which comes almost to the knees of the operator, or a guard which shields the operator to his waist.

Such guards should be completely enclosed in the back, leaving one or both sides open so that the operator may easily climb in or out.

Guards are usually made of heavy sheet metal, sometimes reinforced with an angle-iron frame. In addition to the sheet metal guard, an angle iron is sometimes placed around the outside of the guard to allow about two inches clearance between the guard and anything it may bump against. This additional guarding will prevent the operator from getting his fingers mashed between the guard and any object he might strike.

Training of operators is a most important step. Constant education and strict enforcement are needed to curb reckless driving.

### Protecting Timber in Storage

**SERIOUS** losses from decay in wooden structures are often due to infection of timbers with wood-destroying fungi while in storage. These losses can be greatly reduced by keeping lumber yards in a sanitary condition. Following are some precautions recommended by Forest Products Laboratory:

**Store on well-drained ground**, removed from possible dangers of floods and standing water.

**Remove debris, keep down weeds.** All rotting debris scattered about yards should be collected and burned. In yards already filled in to considerable depths with sawdust and other woody debris the situation can be improved by a heavy surfacing with soil, slag, or similar material. Weeds should be cut away from piles to allow ventilation.

**Use proper foundations.** Provide ventilation beneath stacks. Solid foundation should never be used. In humid regions stock should be piled 18 to 24 inches from the ground.

Wood blocking used in direct contact with wet ground should be protected by application of creosote or other wood preservative or replaced by concrete, brick, or other durable materials. Treated skid timbers are also advantageous.

**Slope lumber piles.** Foundations should be built so that the piles will slope approximately 1 inch to every foot of length.

**Avoiding close piling in the open.** In most regions lumber should not

be close piled in the open, but should be "stuck" with crossers at least 1 inch thick. Lateral spacing is also desirable. Roofing of cover boards on the piles should extend for several inches in front and back.

**"Stickers."** Instead of throwing "stickers" about on the ground to become infected with decay, they should be handled carefully and when not in use piled on sound foundations and kept as dry as possible. Pine saturated with resin, and heartwood of such durable species as white oak or red gum are resistant to infection.

**Keep sheds dry and well aired.** The necessity for piling higher from the ground is apparent. Sheds should be tightly roofed and siding should not be run down below the bottom of the foundation sills. Free air circulation should be allowed from all sides beneath enclosures. Only thoroughly dry stock should be stored in close piles under cover.

**Check fungous outbreaks.** Infected foundation timbers of sheds should be torn out and replaced with wood soaked in a fungicidal solution, or by concrete or brick.

New foundations should be constructed to keep lumber well off the ground. Soil and timber adjacent to the infected area should be sprayed or painted with a germicidal solution such as sodium fluoride, mercuric chloride, zinc chloride, or copper sulphate.

### Industrial Trucks Have Fire Hazards

Industrial trucks—ram, fork or crane type—can be powered by gasoline engines, liquefied petroleum gas, gasoline-electric power units, or storage batteries. These power plants present a definite fire hazard.

Each industrial truck should be equipped with a 2½-lb. carbon dioxide extinguisher; a 4-lb. gas-pressured dry chemical extinguisher, or a 1-qt. vaporizing liquid extinguisher. These sizes are the smallest approved for industrial use.

Gasoline trucks should be refueled in a safe location, away from storage and manufacturing areas—preferably outdoors. The engine should be shut off during refueling and care exercised to avoid spilling fuel or overflowing the tank.

Collisions also cause damage. Lift trucks have been known to break sprinkler pipes, causing heavy damage to stock.

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3-1-5

## For Safe and Efficient Materials Handling

### 1. Handle materials in large units.

A two-wheel hand truck is better than a man's hands.

A four- or six-wheel hand truck is still better.

A fork-truck pallet combination is most efficient for many jobs.

### 2. Avoid rehandling.

Every time you pick up materials and put them down again, it costs money and offers opportunities for accident.

### 3. Balance men and equipment.

Assign no more men and no more equipment to a job than needed.

Equipment sets the pace for men, not men for equipment.

### 4. Select right equipment.

Study operations. Find out what equipment is needed and standardize on that.

Facilities, floor load capacity, ceiling height, volume of material to be handled, intermittent or steady flow, commodity characteristics, and strength of package all have to be considered.

### 5. Move materials in a straight line.

Flow of materials should always be toward destination.

Lay out work areas to reduce back and cross hauling.

### 6. In Storage.

Items with greatest activity should be warehoused nearest to entrances and exits.

## Research Center to Study Materials Handling

Opening of a new Materials Handling Development Center, to develop materials handling methods for individual industries, has been announced by Clark Equipment Company, Battle Creek, Mich.

In the announcement Robert H. Davies, vice-president of Clark's Industrial Truck Division, said: "Materials-handling problems are becoming so complex it is difficult to develop a single handling machine or method that can be used by all industries. Emphasis must now be put on analyzing and finding solutions for handling problems of individual industries such as steel, textile, food, construction and others basic to the economy. This is what the Development Center will do."

The need for an objective appraisal of handling methods is high-

lighted by the fact that as much as 70 per cent of the cost of some products is represented by the movement of materials from the time productions starts until the completed product is in the hands of the ultimate consumer.

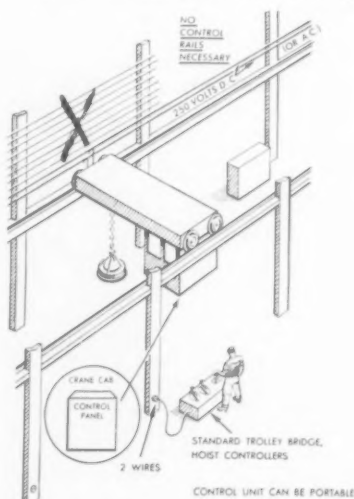
Located in its own 20,500 sq. ft. building, the center will be equipped with both indoor and outdoor "proving grounds" and test areas. Facilities are available to set up mock demonstration areas typical of most industries. Space is available for small seminar groups as well as large-scale industry-wide sessions.

The center is sponsoring a \$5,000 essay contest open to members of the American Materials Handling Society. Ten cash awards, the first \$1,500, will be given for the best papers on "Materials Handling in 1966." Winners will be announced at the Materials Handling Institute Exposition in Cleveland in June.

## Control Cranes From Plant Floor

Remote control of traveling cranes from the plant floor is provided by a new electronic system developed by Femco, Inc., Irwin, Pa.

As carrier current over existing



power rails is the only circuit required, installation is simple for any crane or similar device now in use or in new construction. No additional power rails are required.

With the new control, an operator can raise or lower the hoist (five positions), position the trolley forward or reverse (five positions), travel forward or reverse (three positions) and can energize or turn off the magnet, all from the floor.

As many as eight cranes can be

controlled on one power circuit by use of different carrier frequencies and one operator can operate more than one crane. By use of two control panels, a crane can be loaded by one man and then sent to the other end of its runway where another man can unload it and send it back.

In operation, high-speed synchronous relays on crane and floor panel operate whenever levers are moved. Carrier frequency on each step is shifted down to a lower frequency for an "off" control and up to a higher frequency for an "on" control.

An emergency stop switch is provided to cut off the carrier and open the control contactors if the relay system or carrier link should fail at any time.

The floor control panel may be in a permanent location or may be placed on a cart for portability from one to another power receptacle.

## How Much Should A Person Lift?

Physical differences among individuals make it impractical to set up safe lifting limits for all workers. Height and weight do not necessarily indicate physical strength.

State codes limiting the load a worker may be required to lift differ widely. Each employer should know the provisions of his own state code.

The following weights—in compact form—have been set up by the U. S. Department of Labor as within safe limits for male and female workers performing continuous or repetitive lifting operations:

Male—50 pounds.

Female—25 pounds.

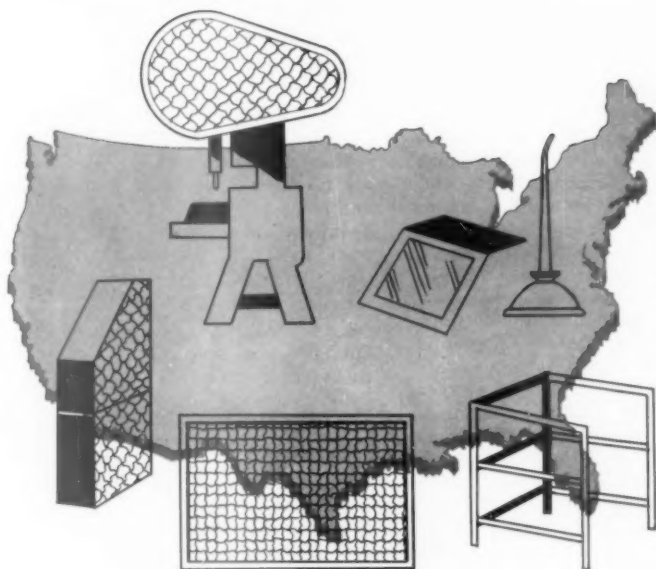
Heavy objects, like lathe chucks, dies, jigs and fixtures, should be stored at approximately waist height.

Where lifting must be done continuously, even though the weights may be within safe limits, mechanical handling equipment reduces fatigue and speeds up work.

## Buy or Rent?

Many items of handling equipment are available from some manufacturers on lease as well as outright purchase. These include: hand lift trucks, electric lift trucks, pallet lift trucks, fork trucks, industrial tractors, skids, portable elevators and cranes, storage racks, and material-handling specialties.

# MACHINE OPERATION and GUARDING



## IN THIS SECTION

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**S**AFEGUARDS that protect the operator without interfering with production have long been the goal of machine designers and safety engineers. Much has been accomplished, not merely in enclosing moving parts but even more in improving basic design.

Machines driven by overhead shafts and belts have given place to streamlined equipment with individual motor drive. Electronic and radioactive devices, still limited in their applications, have interesting possibilities. The trend toward automation, with automatic operations and remote control, will affect the exposure picture in many industries.

At present, machinery accidents are accounting for more than 30 per cent of all permanent partial disabilities and about 9 per cent of the fatal and permanent total disabilities.

# GUARDING THE MACHINE

**EVEN THOUGH** many machines make it completely unnecessary for an operator to do so, workers sometimes place their hands in the danger zone. Guarding, therefore, must protect the individual against his own lapses as well as against the normal hazards of the job.

Machines now built with moving parts enclosed present a trim, streamlined appearance as well as greater safety. Pressure lubrication reaches remote bearings without exposing the oiler to hazard. House-keeping is also improved.

**Color** is a safeguard. Highlighting the point of operation with light tints which stand out against the darker background of the machine enables the operator to watch the work with less effort on the eyes. Strong colors which give warning when a guard is missing also help.

Where built-in guards are not practicable, as in the case of older machines, or machines requiring special guards, standard types of commercial guards may remove the hazard. For such machines as power presses, circular saws, paper cutters, and others, guards have been designed for a variety of operations.

A guard which interferes seriously with output will not be popular with either operator or management. Planning, therefore, should be done in cooperation with the supervisor and the operator.

Some operations can be guarded

effectively with available commercial guards. Others require custom-built guards developed through extensive study of the job by both operating and safety departments.

Machines involved frequently in accidents include woodworking machines, such as circular saws, jointers and planers, and power presses.

The majority of machine accidents occur at the point of operation—the area or point on a machine at which work, such as forming, cutting, etc., is performed. Individual motor drives for machinery have eliminated much hazardous power transmission equipment and improved lighting and housekeeping.

Guard design must often be approved by state factory inspectors and insurance engineers. Since state codes are not uniform and at best represent only minimum requirements, the codes and recommendations of the American Standards Association are the best guides.

## POINT OF OPERATION

Guarding the point of operation effectively is usually more complicated than enclosing power-transmission apparatus.

Point-of-operation guards are installed at those parts of machines where cutting, shaping or forming is performed, and at other points where there may be a hazard to operators inserting or manipulating stock.

Guards should protect operators both from moving machine parts and from moving materials. Safeguards are of the following types:

1. Automatic feeding and ejecting.
2. Two-hand control.
3. Redesign of machine parts so that the operator cannot get into the danger zone.
4. Devices that interrupt movement of tools or machines while any part of the body is in the danger zone.
5. Devices that pull or push hands away from the danger zone.
6. Barricades, covers, hood guards and other enclosures.
7. Interlocking devices.

**Hood enclosure** and cover guards are used on woodworking machines and many other types of equipment. Frequently, such guards are automatic in action. Others are of rigid construction.

**Nip hazards**, such as rubber mills, calender rolls, dough breaks, and others, can be protected by sensitively adjusted controls that operate dynamic brakes when contacted by any part of the operator's body. These guards stop the machine in the shortest possible time.

—To page 240

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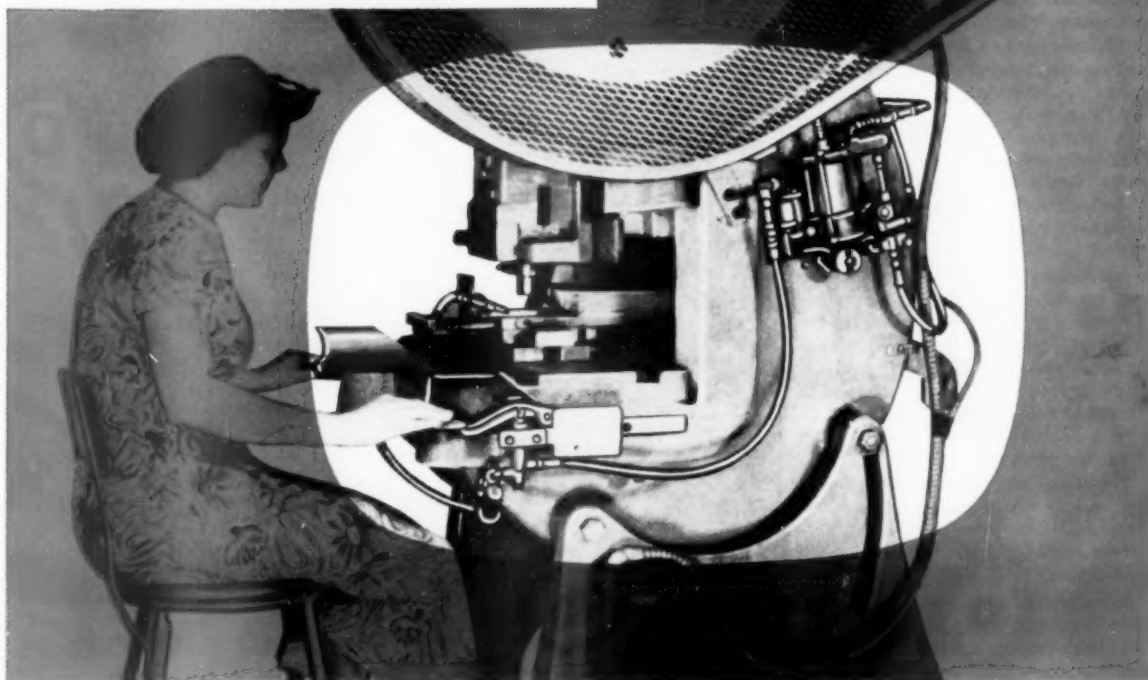
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This metal-working lathe, in operation at a machine-tool show, was enclosed with transparent plastic for the protection of visitors as well as the operator.



**Fatigue leads  
to accidents . . .**



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# ELECTRICAL EQUIPMENT

**MODERN** industry owes much to electricity for its contributions to efficiency, cleanliness, and safety.

Electric motors for individual machines or groups of machines have made it possible to dispense with shafting, belts, and other transmission equipment which require extensive guarding and interfere with light, ventilation and housekeeping.

Installation, maintenance and use of electric equipment have introduced new hazards but these are well known and effective control measures can be applied.

Rules for use of electric equipment are given in numerous publications, including the *National Electrical Safety Code*, which deals with prevention of injuries, and the *National Electrical Code*, which deals with fire protection.

Electrical equipment which bears the approval label of recognized testing laboratories has passed exacting tests and can be used with confidence.

**Installation.** All electrical work should comply with applicable codes.

Transformers, control boards, starting rheostats, and other apparatus should be placed where there is the least danger of accidental contact with energized conductors. All exposed current-carrying parts should be further protected by enclosures, railings or special guards.

Motors should be mounted so as

not to interfere with normal plant traffic. Non-enclosed type motors should be located in areas relatively free from dust, moisture, or corrosive vapors.

**Isolating equipment.** Transformers, control boards and other accessories should be placed in special rooms to which only authorized persons have access.

If a separate room is not feasible, enclosures should be built around equipment having exposed conductors. Enclosures made of metal should be effectively grounded.

Barriers may be used to prevent accidental contact with electrical equipment. Frames may be made of wood, rolled metal shapes, angle iron or pipe. Filler may be of woodstrips, sheet metal, perforated metal, expanded metal, wire mesh, or shatter-proof transparent material.

Some protection can be obtained by elevating wires and current-carrying parts at least eight feet above any working level to which employees (other than qualified electricians) have access.

Where long metal parts, such as rods, bars and pipes are handled, partial enclosures or barriers should be provided to prevent contact with overhead electrical installations.

**Warning signs** should be displayed near exposed current-carrying parts, especially high-voltage installations.

Many standard machine-guarding practices apply to electric equipment, but there are certain hazards peculiar to electricity. Particular attention should be given to the *National Electrical Safety Code* and the *National Electrical Code*.

**Protective grounding** is necessary for exposed non-current-carrying metal parts if the equipment is supplied by means of metal-clad wiring, when installed in a wet location, and when it operates with any terminal at more than 150 volts to ground. Parts to be grounded include motor frames, cranes, cases of transformers and oil switches, wiring conduit, and metal lamp sockets.

Frames of all portable motors which operate at more than 50 volts to ground should be grounded.

**Motors** should be of the type and size required for the load and for conditions under which they must operate. Overloading over long pe-



Five padlocks on this switch mean no power until the last man has finished working.

riods, use of non-approved motors in areas containing flammable vapors or dusts, and defective wiring should be avoided.

Motor windings should be protected from metal particles, dirt, dust, lint or other material which may damage the windings or become ignited.

In areas containing flammable dust and gases, motors designed for hazardous locations should be installed. The *National Electrical Code* should be followed.

Grounded metal enclosures are  
—To page 243

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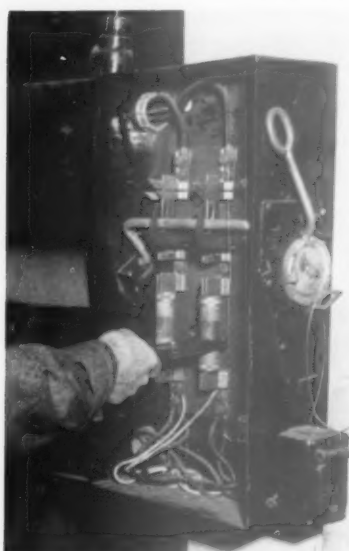
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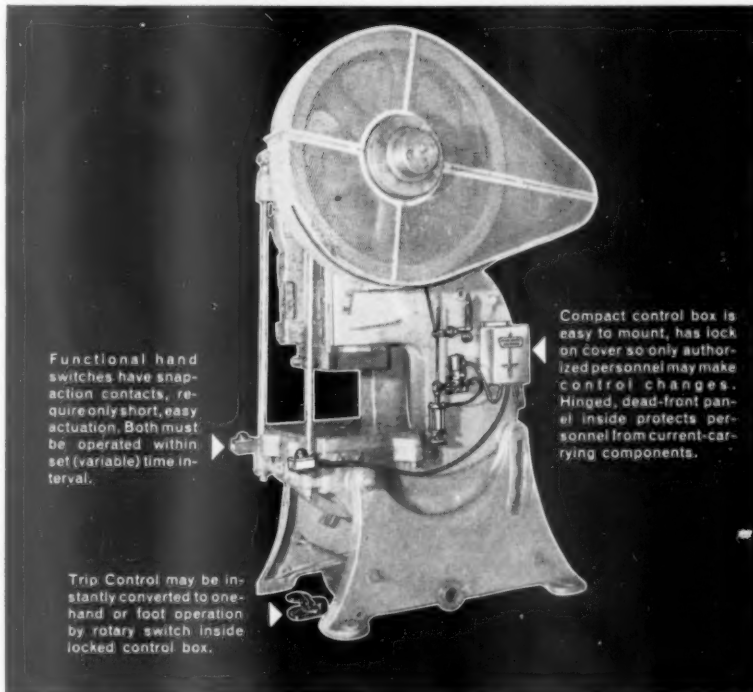
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Replacing fuses with fiber fuse puller.

# MICRO precision switches

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Functional hand switches have snap-action contacts, require only short, easy actuation. Both must be operated within set (variable) time interval.

Trip Control may be instantly converted to one-hand or foot operation by rotary switch inside locked control box.

Compact control box is easy to mount, has lock on cover so only authorized personnel may make control changes. Hinged, dead-front panel inside protects personnel from current-carrying components.

## Increase production... 3 ways... with MICRO SWITCH Trip Controls

MICRO SWITCH Trip Control will speed production and provide safety to the operator and equipment on any power machine that will lend itself to two-hand control.

**1 Less operator fatigue:** Simple direct operating motions, feather-touch finger-tip operation of the control switches, and the absence of gates, harnesses or sweeps keep the operator fresh and alert.

**2 Increased operator confidence:** Without worry over personal safety, operators soon develop a smooth, time-saving "load," "trip," and "unload" sequence.

**3 Instantaneous electrical actuation of the clutch:** Saves time on every operation.

### Outstanding safety features

**Reduces chance of accidental operation.** Operation can result only when control system is functioning properly. The control becomes inoperable if a component fails.

**Control cannot be "cheated" for even one stroke:** If one switch is tied down or broken, the control will automatically kick out.

**Interlock prevents accidental power stroke during set-up.** Operators, set-up men, and expensive dies are protected during set-up. The interlock prevents an unexpected stroke when the motor is started up again.

There is a MICRO SWITCH Trip Control distributor near you. Write us for his name and address.

# MICRO SWITCH

A DIVISION OF MINNEAPOLIS-HONEYWELL REGULATOR COMPANY

In Canada, Leaside, Toronto 17, Ontario • FREEPORT, ILLINOIS



### MICRO SWITCH Trip Controls have wide range of uses

These controls offer a choice of desirable single-stroke control for positive mechanical clutch machines and automatic cycling control for friction clutches and hydraulic and pneumatic equipment.

#### FOR SMALL PRESSES

Provides fast, safe, effortless operation of small two-hand presses, riveting machines, etc.

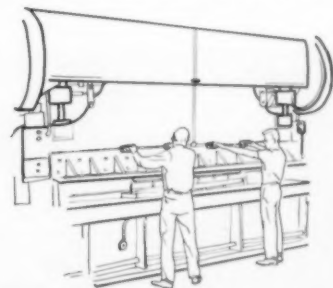


#### ONE HAND—IF NECESSARY



Where one hand is required to hold stock in a protected or enclosed die, control is quickly converted to one-hand operation.

#### FOR USE ON LARGE PRESSES



Makes operation of large presses safe and less tiring. Any number of operator stations may be "wired into" the control circuit.

SEND FOR  
CATALOG 65 TODAY  
Gives complete description  
of all controls and  
clutch actuating equipment.



# HAND and POWER TOOLS

**ESTIMATES** are that hand tools are involved in from five to 15 per cent of disabling injuries—most of them caused by accidental contact with cutting edges or by severe blows. While many of the injuries need only first-aid treatment, these slow down work and offer chances for infection.

Hazards are increased by selection of the wrong tools for the job, neglect of maintenance, and the idea that anybody can use them.

Portable power tools have increased the hazards of hand tools by high speed operation and more severe blows. With electric tools there is also the hazard of shock.

## TYPES OF TOOLS

Tools commonly used in industry are of the following general types:

**1. Metal Cutting**—Cold chisels, marking tools, bull chisels, hack saws, tin snips, cutters.

**2. Wood Cutting**—Chisels, gouges, saws, axes, adzes, hatchets, knives, broad awls.

**3. Lifting**—Levers, crowbars, jacks, hooks, shovels.

**4. Torsion**—Wrenches of various types, pipe tongs, screwdrivers, pliers.

**5. Striking**—Hammers, sledges, mauls, picks, punches.

Some tools belong in more than one classification. An ax, for example, is both a cutting and a striking tool.



Portable power tools should be tagged and turned in immediately when found defective.

**Accident causes.** One or more of four primary causes are responsible for injuries with hand tools. Following are examples:

1. A wrong or improvised tool—a file or screwdriver for prying; a wrench for hammering.

2. A defective tool—a burred chisel head; a dull saw or knife; a split maul handle; a tool of poor quality.

3. Tools incorrectly used—striking two hard-surface tools together; failing to take practice swing with sledge to adjust for clearance; pulling on pliers in line with face.

4. Tools not put away—wood chisel loosely laid in tool box; hammer left on edge of machine; knife left on table.

**Selection.** Tools for both routine and special work should be kept in stock or readily available. High grade tools are the best buy and the difference in initial cost is offset by longer life, reduced upkeep and lessened risk of accident.

Suitable arrangements should be made and responsibility placed for the purchase, handling and care of tools. The purchasing department should be kept informed of tool performance as a guide to future purchases.

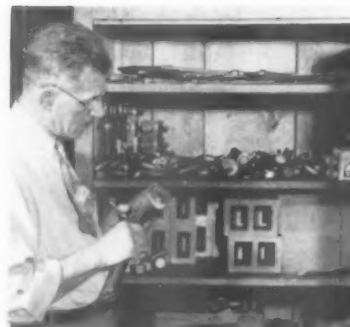
Alloy steels combine strength and toughness with light weight which justifies the higher cost for some jobs. Alloys are used for hammers, wrenches, screwdrivers, wood working tools, pliers, rivet sets, saws, knives and punches.

Some alloys offer resistance to mushrooming, and chipping but no tool should be subjected to unnecessarily rough use.

Non-ferrous hammers or mallets should be used for striking tempered or case-hardened tools. These hammers are usually made of copper, lead, bronze, brass, rawhide, or wood.

**Handles.** With hammers, sledges, axes, picks, etc., the greatest strain is where wood and metal join. An adequate supply of good handles should be kept in the toolroom. These should be straight-grained wood, free from slivers. Hickory, ash and maple are preferred. Handles should be fitted by an experienced person.

**Insulated tools.** For working around electric equipment, tools with insulated handles are frequently used. These provide desirable



Foreman checks hand tools used in his department. Defective tools are repaired or discarded.

protection but are not a substitute for rubber gloves and other protective devices.

**Marking tools.** Steel stamps and holders for stamping identification marks on machine parts and other metal surfaces are available in alloys which resist mushrooming and do not chip readily.

**Car movers.** For moving cars on rails, car movers which do not slip readily are available. When two men are needed to move a car, two car movers should be used. Ordinary crow bars should not be used.

## THE TOOL ROOM

Centralized tool control facilitates uniform inspection and maintenance of tools. Protective equipment, such as goggles, can be recommended and issued with the tools.

Centralized control also makes it possible to keep records on tool failure and locate unsafe conditions and unsafe acts. Tools are exposed to less damage than with scattered storage. (—To page 239)

## REFERENCES

### Portable Hand and Power Tools

**National Safety Council:** Accident Prevention Manual for Industrial Operations, 1955.

—Grounding Portable Electric Equipment; Data Sheet D-299.

—Electric Hand Saws; Data Sheet D-344.

—Extension Cords; Data Sheet D-Gen. 21.

—Electric Cords and Fittings; Data Sheet D-385.

—Explosive Splitting Wedges or Guns; Data Sheet D-321.

**National Safety News:** Why Electric Tools Are Safe; E. L. Connell, Apr. 1954.

—Check It to Check Your Accidents; George MacDonald, Feb. 1953.

—Maintaining Electric Hand Tools; John A. Hill, Feb. 1950.

—When You Use Portable Electric Tools; B. B. Ramey, Apr. 1948.





**Close your doors to fire  
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It doesn't take much. Just one slip of an ordinary tool in a fire-prone location and you can be out of business — perhaps permanently. That's why you should insist that your employees carry only Ampco Safety Tools into hazardous areas for any type of work.

Factory Mutual Laboratories and other safety experts approve and recommend Ampco Tools for use in spray booths, paint lockers, grain elevators, gasoline storage areas, and all similar locations where a dangerous hot spark could mean a disaster.

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Sole producer of  
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T-15

### *How to choose Safety Tools*



For tools subject to impact and/or torque — specify Ampco Metal.



For tools that have cutting edges or gripping teeth—specify Ampco Beryllium Copper Tools.



For tools to be used in the vicinity of acetylene or similar gases, specify Ampco Monel† Tools.

†T. M. International Nickel Co.

# Bailey EQUIPMENT

contributes to

## STEEL PLANT

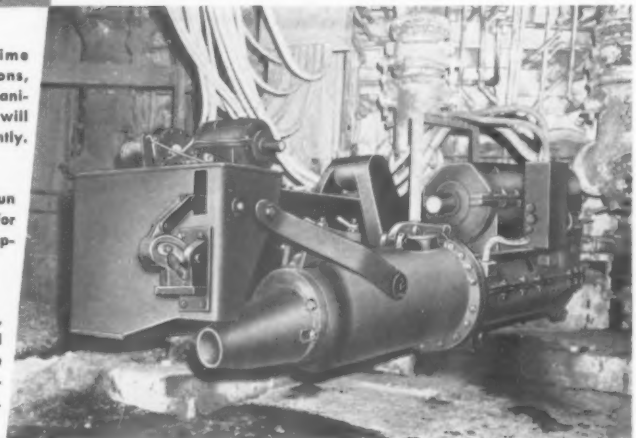
### Safety and Efficiency



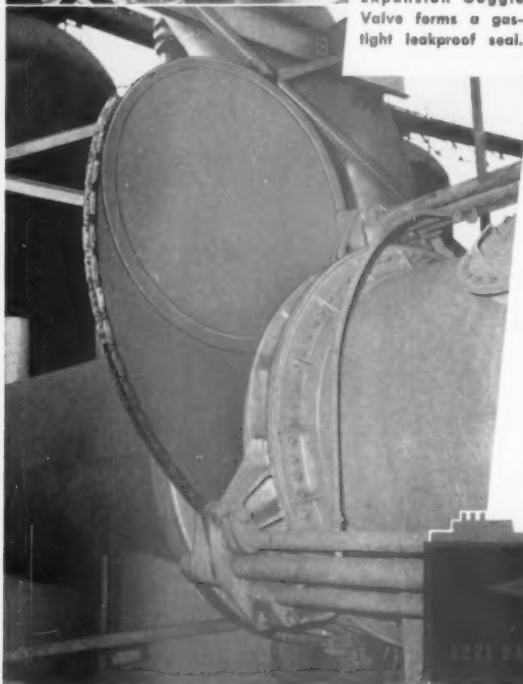
Regardless of time between operations, this Bailey Mechanical Goggle Valve will open or close instantly.

The Bailey Clay Gun has ample power for maintaining long tapping holes.

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The dependability of Bailey Equipment plays a part in the safe, efficient operation of many major steel plants. All Bailey Equipment is designed and manufactured with two basic considerations in mind—protection for men and equipment, and operation that is dependable and economical.



## HAND and POWER TOOLS

—From page 236

A procedure can be set up so that the attendant can send tools in need of repair to a department equipped for reconditioning.

Some companies issue to each employee a set of numbered checks at the time of employment. These are exchanged for tools at the supply room. By this system the attendant knows where each tool is and can call it in for inspection at regular intervals.

When there are operations at several locations it is not always practicable to maintain a tool supply room. In such cases the foreman should inspect all tools frequently and take out of service those found defective. A check list is helpful.

Some workmen provide their own tools. These should receive the same inspection as those owned by the company.

### CARRYING TOOLS

Tools should never be carried where they interfere with using both hands while climbing. A strong bag, bucket, or other container should be used for hoisting or lowering tools.

Chisels, screw drivers and pointed tools should never be carried edge or point up in the pocket. They should be carried in a tool box or cart, in a carrying belt like those used by electricians and structural steel workers, in pocket tool pouch or in the hand with points and cutting edges away from the body.

Display boards used for maintenance and repair tools do much to encourage return of equipment.

Racks or bins which can be moved to the work area are also useful.

Each workman's tools should be kept in a box or rack convenient to his work area. The box should have designated places for such things as wire brushes, chisels, saws and knives to avoid exposing sharp edges.

**Inspection.** Permissible wear limits for tools should be set up as a guide for inspection when they are returned to the crib. Lacking such standards, the attendant or inspector should be qualified to pass on the condition of the tool.

Periodic inspections of all tool operations are needed to insure efficient control. Inspections should include housekeeping in the tool crib, tool service, number of tools in the inventory, handling procedure, and condition of tools in general.

**Maintenance and repair** require adequate facilities, such as work

benches, vices, forge or furnace for hardening and tempering, tempering baths, repair tools, grinders, goggles and adequate lighting. Repairs should be done by trained men.

### NON-SPARKING TOOLS

Tools of non-ferrous materials are often used where flammable gases, highly volatile liquids and other explosive substances are used or stored. These tools are made of such metals as aluminum, bronze, brass and beryllium-copper.

Tools made of these alloys include hammers, chisels, punches, prybars, screwdrivers, scrapers, spatulas, picks, and shovels. Special tools of any type can be made to order.

Substances easily ignited include gunpowder, lint, TNT, carbon disulfide, and ethyl ether.

Being softer than steel, non-ferrous tools are less likely to break off fragments from the metal being worked on by the tool.

With continued use, these tools may become impregnated with particles of foreign substances which may cause sparks if not removed. Frequent inspection is needed.

Non-ferrous alloys are more expensive than steel and these special tools are used only where there is an explosion hazard.

### PORTABLE ELECTRIC TOOLS

General classifications of hand-operated power-driven tools are:

1. Abrasive tools, such as disk and portable belt sanders, polishers, and bench and flexible shaft grinders.
2. Drills.
3. Saws and other cut-off tools, routers, etc.
4. Assembly tools, such as screwdrivers, nut runners and tappers.
5. Hammers.
6. Sheet metal shears.
7. Fans.

Portable electric tools are generally designated as:

**Light duty**, for intermittent use on light work.

**Special duty** or **standard duty**, for slightly heavy work or fairly continuous operation.

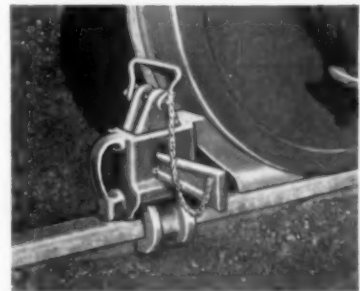
**Heavy duty**, for continuous operation and production service or for heavy work.

Safety switches, which operate the motor only while the switch is held in the closed position by the operator, should be used.

Three possible methods of preventing electric shock to the opera-

# STOPPED

*and it can't move*



## WHY?

**Because No Car Wheel Can Move**

**When It's Held In Position With The M & M RAIL CLAMP**

Heavy industries—mines, quarries, mills, etc.—depend upon the M & M Rail Clamp to reduce danger of costly accidents and injury to employees from cars slipping or running away. It will not slip!

The M & M Rail Clamp is a compact, complete, durable unit. No parts to lose—wedge is attached to clamp with strong steel chain. No blocks, ties or shims needed—saves time in positioning and moving up. It withstands the weight of heaviest cars.

See for yourself how the M & M Rail Clamp performs. You won't be disappointed. Order one today!

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tor are: (1) Prevent electric contact with the shell; (2) Use non-conductive material for the shell and all parts which the operator may handle; (3) Ground the shell by means of a third wire or central grounding.

Grounding is generally considered the most practical method of safeguarding the operator against shock.

### Guarding the Machine

—From page 232

**Two-hand controls** are frequently installed on power presses, bakery

machinery, guillotine paper cutters, and other types of equipment where barrier guards are not practicable.

**Interlocking devices** prevent operation of the starting control when the cover or barricade is not in place. These are used on centrifugal extractors, dough mixers, tumblers, and some types of pressure vessels.

### POWER PRESSES

Safeguarding power press operations is one of industry's major accident prevention problems. Because of the many types of presses and the number of specialized operations

performed, the subject is a highly complicated one. Fortunately, much material on press operation is available from National Safety Council, American Standards Association, U. S. Department of Labor, insurance companies, and other sources.

Automatic feed may make it unnecessary, but not impossible, for an operator to place his hand between the punch and the die. It is still necessary to provide a gate guard, enclose the ram, or limit its stroke to  $\frac{1}{4}$  inch or less.

For some operations, semiautomatic feeds are used. Principal types are: chute, plunger, slide or push, sliding dies, dial and revolving dies.

Two commercial guards adaptable to many operations are the sweep and pull-back types.

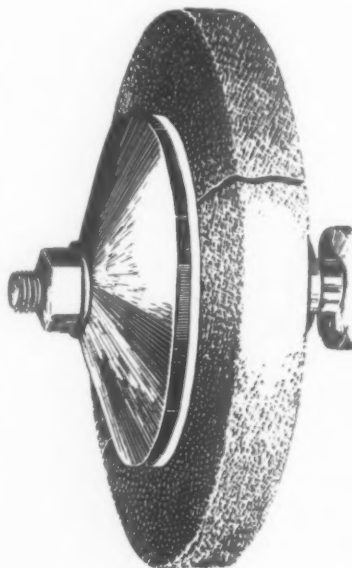
**Sweep guards** are best used on small presses. They are easily adjusted and give the same protection when the clutch fails as they do for a regular stroke of the press.

A sweep guard is more effective when a flag of fiber or other material is placed on the sweep arm. This helps to prevent an operator reaching around the guard on one side, and on slow-moving presses from

## THE STORY of the BROKEN GRINDING WHEEL

A whirling grinding wheel can tell its own story of havoc when it explodes . . . But in this case Perks Safety Washers do the telling!

A test conducted in the Sta-Safe laboratory used the new neoprene faced Perks Safety Washers and an 8" grinding wheel cracked in two places. At 5,000 RPM—an outer surface speed of 12,500 feet per minute—Perks Safety Washers held the wheel intact!



Standard Safety does *not* recommend to you the use of broken grinding wheels—even with Perks—but Standard Safety does recommend Perks Safety Washers as a precaution against possible tragedy in your company. Perks Safety Washers are easily installed on any size grinding wheels. Keep your equipment and personnel safe-guarded. Write now for Bulletin No. 54 containing complete information about Perks Safety Washers.

## STANDARD SAFETY EQUIPMENT CO.

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### Protect Operators • Increase Production

Wiesman cam-action press guards enable operators to work at top speed without fear of accident. Guarding is effective and completely automatic . . . does not hamper operator's vision or movement. For all sizes and styles of presses. Used by hundreds of firms. Inexpensive . . . easy to install.

Over 30,000 sold



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**Wiesman Manufacturing Co.**  
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putting his hand between punch and die after the guard has swept past the center of the stroke.

Sweep guards are not effective protection on large presses.

**Pull-back guards** forcibly remove the hands of the operator from the point of operation if he is out of rhythm with the machine. Cables connect the ram with wristlets on the operator's arms. As the ram descends, the hands are forcibly withdrawn.

The guard must be adjusted to each operator and each job because of variations in arms, hands and fingers.

**Die design.** On punch and forming presses it is frequently necessary to install guards of a different type for each set of dies used. For this reason, enclosure guards should always be considered integral parts of the dies.

**Feeding tools.** Several types of feeding tools have been developed for use on presses with automatic feeds or enclosed guards. These tools are made of soft metal, aluminum or magnesium. They include pushers, pickers, pliers, tweezers, forks, and suction disks.

These tools are not substitutes for guards and should be used only in conjunction with two-hand trips or pull-back guards.

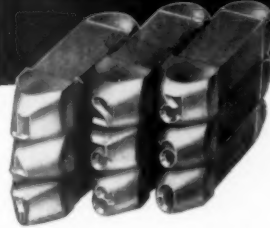
**Photoelectric guards.** The photoelectric relay consists of a beam of light. When this is broken by the press operator's hands, the start or completion of the ram stroke is prevented. The photoelectric relay responds instantaneously, is completely automatic, takes up little space, is easily installed and economical to maintain. Against these advantages are comparatively high installation cost and limited uses.

On presses with friction clutches, the ram travel stops immediately when the light beam is broken. This method is not effective on presses with positive clutches because the ram will continue its stroke until the end of its cycle. The guard should be operated from a closed electric circuit so that current interruption will automatically prevent the press from tripping.

**Radioactive guards** have been used on some power press operations. The operator wears radioactive wrist bands. When his hands are in the protected area, the radioactive units are detected by Geiger tubes, and the press will not operate. Radioactive materials are within safe limits.

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LETTERS and  
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- No Spall
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- Knurled Grip
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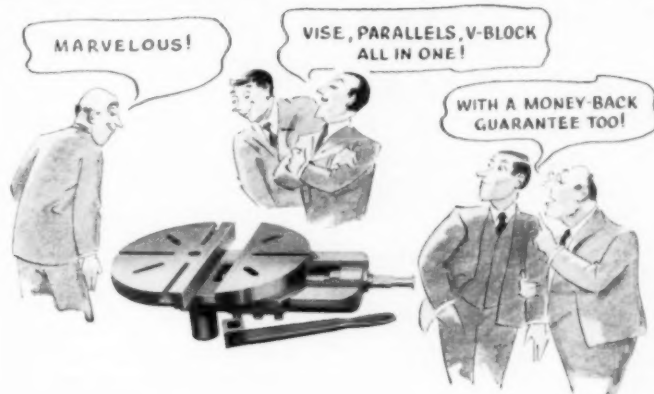
Knurled sides for positive grip—patented design provides perfect balance and deeper impressions. Especially recommended for toughest jobs on steel castings, cylinders, tool steel, etc. All sizes available 1/16" to 1" characters.



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The handiest, fastest, safest way to make drilling set-ups! Just drop in and drill—all shapes—all sizes. We guarantee it will save its cost in labor alone in six months—to say nothing of the savings from uninterrupted production. We'll put one in your shop for 30 days. Not one penny cost to you if you aren't enthusiastic. Literature on request.

**MODERN MACHINE TOOL CO.**

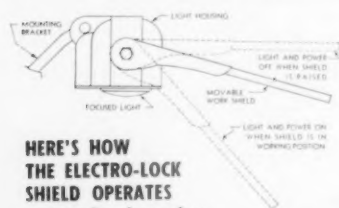
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### The Shield Which

### Commands Operator Safety

The position of the Junkin Electro-Lock Shield is controlled by mercury switches. Interlocking power and light circuits will not permit the machine to operate unless the shatter-proof shield is in a completely protective position. Affords perfect visibility, and protects the operator from flying particles. Write for free bulletin No. 103.



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### POWER TRANSMISSION

Power transmission apparatus includes shafting, belting, pulleys, gears, starting and stopping devices, and other moving parts of equipment used in the mechanical transmission of power. Also included are prime movers, intermediate equipment, and other machines.

Power transmission parts, particularly in modern installations, contribute a relatively small proportion of the total number of injuries. Nevertheless they can cause permanent disabling injuries and should not be neglected.

Individual motor drives and modern designs with moving parts enclosed have eliminated much guarding on the job. However, some guards must still be added when machines are installed.

### MATERIALS FOR GUARDS

Sheet metal, perforated metal, expanded metal, heavy wire mesh or bar stock may be used for most types of guards.

Transparent plastic is used where inspection of moving parts is necessary and the strength of metal is not needed.

Shatter-proof glass is used in similar situations, particularly where illumination of guarded parts is essential and the flexibility of plastic is not required.

Where flying particles may mar safety glass or plastic the surface may be protected by replaceable glass covers.

Wooden guards are relatively low in strength but are sometimes used where splashes and fumes from corrosive substances would attack iron or steel.

Aluminum or other soft metals may be used where resistance to rust is essential, or there is possibility of damage to the machinery from iron or steel.

**Supervision.** Frequent checks should be made to see that instructions are observed and that safety devices are functioning.

Operators occasionally make safety devices ineffective in an attempt to speed up production or make operation easier. This is especially frequent with two-hand controls. Operators should be warned of the hazards involved and instructed in the use of safety devices.

### CIRCULAR SAW

The circular saw is one of the most useful of woodworking power tools,

and it is also the most dangerous. It causes more permanent disabilities than any other machine in the industry.

Rim speed of a circular saw should not exceed 12,000 fpm, unless the saw has been manufactured or hammered for a higher speed and is so marked. When turning at high speed the teeth are almost invisible.

Following are important points in guarding:

1. Saw must be equipped with a hood that will cover it to at least the depth of the teeth.

2. Hood must automatically adjust itself to thickness of material being cut and remain in contact with it, unless hood is in a fixed position. Then space between bottom of guard and material must be no more than half an inch.

3. Exposed parts of saw blade under table must be guarded.

4. There should be a clear view of saw at point of operation.

5. Guards should be designed and constructed to avoid vibration.

6. All teeth should be even in length.

7. Blade should not be lumpy or warped.

8. Depth, size and shape of gullets should be such as to let all sawdust

### LOCK OUT DANGER



to workers in your plant with "Lock-Out" safety device for use on switches, fuse boxes, and similar controls. Stops all possibility of starting equipment when maintenance or repair men are working on it.

Holes permit six different men to put locks on a switch. Machine cannot be operated until last workman removes his lock. "Lock-Out" devices are coated with heavy vinyl plastic for top insulating qualities. Size 4 1/4" x 1 1/2".

**OSBORN MFG. CO.**

WARSAW

INDIANA

discharge freely. Bottom of the gullet should be round.

9. Cut in wood should be a trifle wider than thickness of saw blade.

10. Saw must be discarded if it has a crack longer than 5 per cent of diameter, unless diameter is reduced to eliminate crack and tension is corrected.

### SWING CUT-OFF SAWS

1. Swing cut-off saws must have device to return saw automatically to back of table when released at any point. Fiber rope or cord must not be used in device.

2. Limit chains, positive stops or table extensions must be provided to prevent saw from swinging beyond front edge of table.

3. Where it is possible to pass behind a swing cut-off saw, rear of saw must be completely housed when saw is in back position. Housing must include swing frame as well as saw.

### MANUAL-FEED RIPS AW

1. A splitter or spreader must be provided to prevent pinching or binding. It must be slightly thinner than the saw kerf and slightly thicker than the saw disc.

2. Anti-kickback devices of steel should be designed and installed so as to be effective for material of all thicknesses.

### Electrical Equipment

—From page 234

recommended for starting rheostats, switches, fuse panels, and other operating accessories. In some devices, both switch and fuses are enclosed in a cabinet so arranged that the switch can be operated without opening the cabinet. The switch is interlocked through a cam so that the fuses are inaccessible until the switch is opened.

Another type of enclosed switch permits the door of the cabinet to be opened with a key, even though the switch is closed. With either type of cabinet, it is possible to padlock the door open or closed, and the switch can be padlocked in the open position.

**Maintenance and repair work.** When repair work is being done on motors, their controlling devices, or the machinery they drive, the circuit should be de-energized by opening the necessary switches and locking them in the open position.

If a switch cannot be locked open, it should be blocked and a tag attached showing that the switch is to be closed only by the man whose name appears on the tag. Warning signs should be displayed.

**Wiring** depends upon type of building construction, size and distribution of electrical load, exposure to dampness or corrosive vapors, location of equipment, and other factors. For most plant conditions, rigid metal conduit, effectively grounded, is most satisfactory.

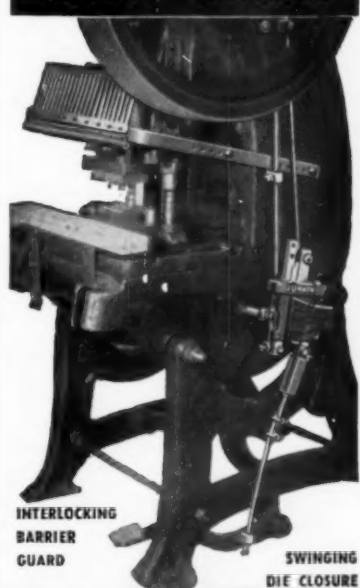
Other methods which may be used under certain circumstances include armored cable, non-metallic sheathed cable, flexible metal conduit (BX), raceways, and open wiring on insulators. National and local wiring codes should be followed.

### CORDS, SOCKETS, LAMPS

**Extension cords** should be of a type listed by Underwriters' Laboratories and labeled to show compliance with all requirements of the *National Electrical Code*. They should be inspected regularly. Kinking or excessive bending of cords should be avoided.

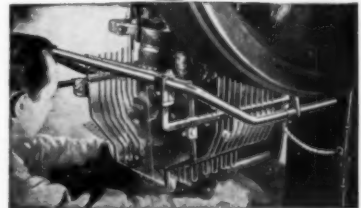
Ordinary lamp cord should not be used where it will be exposed to mechanical wear or to moisture—never for extension lamps in boilers, tanks, or on damp or metal floors.

## JUNKIN SAFETY GUARDS



INTERLOCKING  
BARRIER  
GUARD

SWINGING  
DIE CLOSURE



### Your SUREST Protection Against Press Accidents

JUNKIN safety guards prevent press accidents, afford maximum protection, increase press production, lower insurance costs and generally improve plant morale. Make an investment in safety now and investigate Junkin Safety Guards for primary and secondary punch press operations. Write for free catalog "The Key to Protection".



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#### The Bergman SAFTY-SPANNER

Developed for the  
job by the men  
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12"—18"—  
26 1/2"  
1 1/4" to 2 1/2"  
JAW  
OPENINGS

It's a helper you can trust!

**CAN'T SLIP OFF  
WON'T DAMAGE VALVES  
IT'S SPARK PROOF**

Made of toughest aluminum-magnesium alloy. Light in weight. Self-centers automatically for quick application. Operates up to 45° angle with positive fulcrum. 8000 tested handle pressure. Withstands 50000 pressure at hook jaw.

**PROTECT YOUR WORKERS  
WITH SAFTY-SPANNER**

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**Bergman SAFTY-SPANNER CO.**

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Toledo, Ohio

Cord for portable tools and equipment is made in several grades. Rubber-sheathed cord should be used with tools and lamps in boilers, tanks and other grounded enclosures.

For heating devices, such as electric irons and water heaters, the cord has an insulating covering containing flame-proofing material such as asbestos fiber. It resists high temperature but not dampness.

Sockets should be of porcelain, non-conducting plastic, or rubber covered. Ungrounded metal-shell

sockets are not recommended.

**Extension lamps** are sometimes used under conditions where a shock of 110 volts might be fatal. Safe cords and lamp holders must be provided and maintained in good condition. Handles should be of non-conducting material and there should be no metallic connection between the lamp guard and the socket shell.

**Miniature voltage.** Portable transformers which step the lamp voltage down to six volts are frequently

used where the shock hazard is serious.

**Employee training.** The safety program should include thorough training of all employees who install or operate electrical equipment. In addition to instruction in the hazards of electricity they should be trained in up-to-date first aid techniques.

Of particular importance is the knowledge of the arm-lift, back-pressure method of resuscitation. Distribution employees should also know the pole-top method.

WHO WAS THE GUY THAT INVENTED THIS SAFETY DEVICE? I WANT TO SEND HIM SOME FLOWERS 'CAUSE HE SURE SAVED MY HANDS

HEY, WHAT GOES, JOE?

**THE POSITIVE SAFETY MANUFACTURING COMPANY**  
4403 PERKINS AVENUE, CLEVELAND 3, OHIO

## OVER-CURRENT DEVICES

**Fuses or circuit breakers** should be installed in every circuit for protection of both personnel and equipment. These devices open the circuit automatically in the event of excessive current flow due to accidental ground, short circuit, or overload.

Types of fuses include:

**A link fuse** is a strip of fusible metal between two terminals of a fuse block. If exposed, it may scatter hot metal when it blows.

**Explosion fuses** are used in central stations, power houses or on overhead lines. When they blow, the gases generated aid in quenching the arc.

**Plug fuses** are used on circuits which do not exceed 30 amperes at not more than 150 volts to ground. The type which cannot be bridged inside the holder is recommended.

**Cartridge fuses** have fusible metal strips enclosed in fiber tubes. Those which indicate when the fuse is blown and the refillable types in which fusible elements may be replaced are available.

**Insulated fuse pullers** should be kept on hand for pulling and replacing fuses. It is a code requirement that fuses be protected by a switch which will deenergize the fuses when opened. If the fuse is not protected by a switch, the supply end of the fuse should be pulled out first, and in replacing, the supply end should be inserted last.

**Circuit-breakers** are used in high voltages or large current capacity circuits, and are becoming more common in many kinds of circuits. They may be instantaneous in operation, equipped with timing devices, manually or power operated.

## SWITCHES

Types of switches in use include snap switches, knife switches, enclosed externally operable air-break switches, and oil switches. Those designed for controlling individual motors and machine tools and for

**Are You Neglecting The Safety of Your Men?**

Stop using old fashioned hand, foot and bar methods of closing latch-type lock hopper bottom car doors. Use the Prescott Safety Tool and prevent ruptures, strained backs and smashed fingers. Write today for free folder.

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WARREN, OHIO



lighting and power circuits are of the enclosed type.

**Open-knife** switches are undesirable because of exposure of live parts and because of the arc formed when the switch is open. It is advisable, therefore, to enclose knife switches in grounded metal cabinets having a control level extending through a slot in the cover.

**Oil switches** have contacts which operate while submerged in oil. They are especially desirable in circuits of 750 volts or more and may be used also in lower voltage circuits.

**Snap switches**, such as pushbutton or toggle types, usually have live parts enclosed. Flush switches should be installed in metal boxes, and surface switches used in open wiring and moulding work should be mounted on porcelain or plastic sub-bases. These switches should indicate whether the circuit is open or closed.

Snap switches are preferable to key or pull-chain sockets. Key sockets, if used, should be of porcelain, plastic, or other non-conductive material. Pull-chains should contain non-conductive links.

Protection against accidental shock from live electric parts, such as switchboards, fuse panels and control equipment is obtained by insulating the floor area within reach of live parts.

For low-voltage exposure, dry wood floors without metal parts, or insulating mats, may be used. Mats should be non-conductive and moisture resistant.

#### ALUMINUM WIRE

The current-carrying capacity of aluminum wire is 84 per cent of that of copper wire as specified in the 1953 and earlier editions of the National Electrical Code. For circuits it has been common practice to use an aluminum conductor two American wire gauge sizes larger than a copper conductor to comply with the 84 per cent factor given in the code.

## LUBRICATION

**OPERATING** at high speeds on countless bearings, modern machines need lubrication at frequent intervals. New lubricants and lubricating systems have been developed to meet these needs. Lubrication has progressed from the oil can to the grease gun and central pressure systems.

Because it is such an important part of a preventive maintenance program, lubrication should be handled on a definite schedule.

Lack of lubrication results in hot bearings, shutdowns, and sometimes fires.

Over-oiling of motor bearings causes oil to drop or to be thrown onto the insulation of electrical winding. Oil deteriorates the insulation, exposing the live conductors that will arc and cause fires or electrically charge ungrounded surfaces. Oil on the floor creates slipping and fire hazards.

A survey of plant equipment will determine lubrication requirements. This information should be entered on the machinery records.

The following methods are commonly used:

1. Capillary oilers
2. Wick oilers
3. Ring and chain oilers
4. Gravity feed oilers
5. Pump feed oilers
6. Cartridge oilers

Some machines have hundreds of remote bearings and these can be served efficiently and economically by centralized systems. Clean oil or grease is supplied under pressure from the central pumping unit to every bearing.

The lubricant is renewed as often as the machine and operation re-

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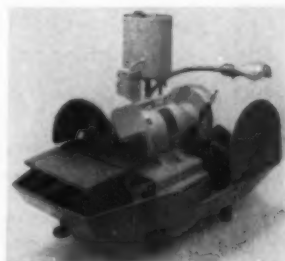
When ordering chuck keys specify: Make, Chuck and Key Nos. In ordering lathe wrenches indicate make and size and Serial No.

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with "Coolant-thru-the-wheel" that directs the chips and ground particles into coolant base. If in doubt arrange for demonstration. Feel the tool its "Cool." On the market since 1946. Sharpens Carbide, Hi-Speed Tools or general grinding. Both CUP and Straight Wheels on grinder. Wheels to 325 grain available at standard prices. Fine wheels grind keener edges that last longer

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A versatile combination visual circular saw guard and saw fixture, uniting the ultimate in precision-designed tools for efficient guiding with the maximum in 100% safe guarding has recently been introduced and marketed by the Brett-Guard Company. Simple to set up . . . economical for both large and small jobs . . . so safe that it's being used in vocational schools for the blind . . . made of transparent PLEXIGLASS that lets you see what you saw . . . fully adjustable for all those up-till-now impossible-to-guard cuts . . . fitting all circular table-type saws for 6" to 16" blades . . . here is truly the last word in both safety and efficiency!

**Just a line to us brings the**  
**BRETT-GUARD to your plant for a**  
**30-day FREE trial!**

—Specify Mfr's Name Your Table Saws—  
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**ENGLEWOOD, NEW JERSEY**  
**Write for Free Catalog—**

quire. This may be once or twice each shift or several times an hour.

On some systems an indicator signals the delivery of the correct amount of oil to each bearing.

With a central pressure system there is no need to stop the machine for lubrication and the hazardous job of crawling over the machines is eliminated.

Pressure lubrication systems require the use of special greases. Silicone grease, one of the newer lubricants, has shown unusual ability to stand up under high speeds and high temperatures.

**FOR OLDER INSTALLATIONS**

Addition of an automatic system may not be practical on some older machines. Other measures will help to improve lubrication and reduce the hazard to the oiler. One or more of these methods may be used for reaching remote bearings:

1. A service platform or runway giving access to several bearings. Moving parts of machinery should not project over platforms; if this is unavoidable, these parts should be enclosed.
2. A small car suspended from an overhead I-beam enables the oiler to travel parallel to the line shaft, and reach bearings with his oil can or grease gun.



Regular lubrication keeps bearings cool and quiet. Grease guns and specialized lubricants have replaced the oil can for many machines.

3. Long-spout gravity flow or force-feed oil cans enable the oiler to stand in the clear. Some of these have spouts long enough to reach overhead line shaft bearings from the floor.

4. Oil reservoirs at individual bearings with control devices operated by hand poles.

5. Extension pipes on bearings where grease or oil cups are in the danger zone. These may not be practical in cold places where low temperatures make it difficult to force oil or grease through the pipes.

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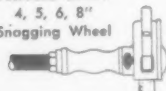


**STRAIGHT GRINDER**  
4, 5, 6, 8" Snagging Wheel  
Available with face plates.



**STRAIGHT GRINDER**  
7"-9" Depressed Center

**FLEXIBLE SHAFT**  
4, 5, 6, 8"  
Snagging Wheel



**DIE GRINDER**  
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<b>Fire-Fighting Techniques</b>	<b>. 250</b>
<b>Handling Flammable Liquids</b>	<b>. 252</b>
<b>First-Aid Extinguishers</b>	<b>. 254</b>
<b>Automatic Protection</b>	<b>. 258</b>
<b>Spontaneous Ignition</b>	<b>. 264</b>
<b>Plant Organization</b>	<b>. 268</b>

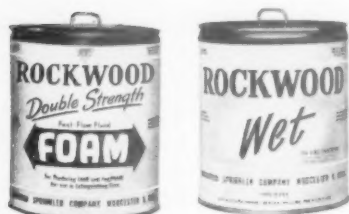
Advance planning and organization is equally important. Having the right equipment to fight fire and trained, reliable men prepared for emergencies will mean methodical defense instead of panic and confusion.

# **ROCKWOOD** built-in proportioning systems for industrial fire trucks

Rockwood's long, practical experience and constant research assures you the safest, most economical means of fighting all types of fires. These pages illustrate a few of Rockwood's family of products that are playing a vital part in fire fighting programs throughout America.



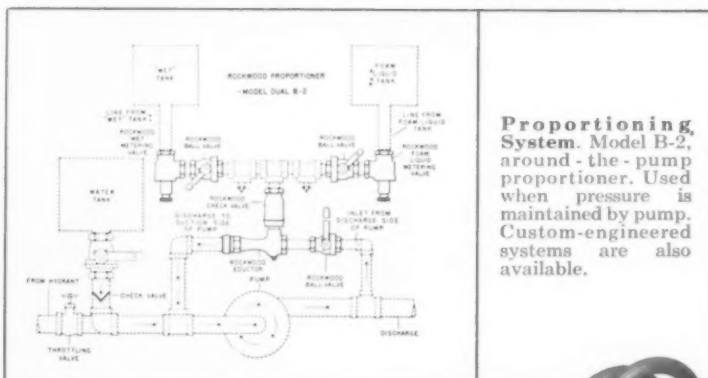
Rockwood's new  
**Double Strength FOAM**  
and **Rockwood WET**  
offer you  
many advantages



**Double Strength FOAM** has double foam-making capacity, cutting in half the transportation cost and storage space. It is faster spreading and flows freely — even at subzero temperatures. An outstanding FOAM liquid to go with Rockwood's advanced type of FogFOAM and FOAM Nozzle for quickly putting out fires in gasoline and other similar flammable liquids. Available in 5 gallon cans or 50 gallon drums.

**Rockwood WET** increases the spread and penetration of water into deep seated fires involving ordinary combustibles such as wood, paper, cloth, etc. It greatly reduces the water needed to extinguish such fires. Available in 50 gallon drums, 5 gallon and 1 gallon cans.

Regular FOAM and All Purpose FOAM are also available.

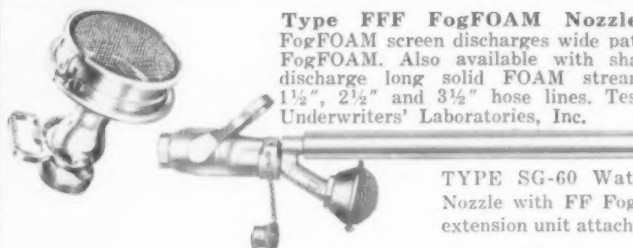


**Proportioning System.** Model B-2, around-the-pump proportioner. Used when pressure is maintained by pump. Custom-engineered systems are also available.



**The F-501 Nozzle** developed for use with 1½" hose to provide an economical means of applying a solid stream of FOAM on flammable liquid fires.

**The Variable FW Metering-Check Valve** with FW Eductor incorporates both the Metering Valve and Ball Check Valve in one unit and meters liquid into the hose line in any proportion from 1% through 6%.



**Type FFF FogFOAM Nozzle** with FogFOAM screen discharges wide pattern of FogFOAM. Also available with shaper to discharge long solid FOAM stream. For 1½", 2½" and 3½" hose lines. Tested by Underwriters' Laboratories, Inc.

**TYPE SG-60 WaterFOG Nozzle** with FF FogFOAM extension unit attached



## Rockwood offers you 4 types of turret control

...and any Rockwood turret gives you 4 types of discharge (1) FogFOAM, (2) Solid FOAM stream, (3) WaterFOG, (4) Solid water stream

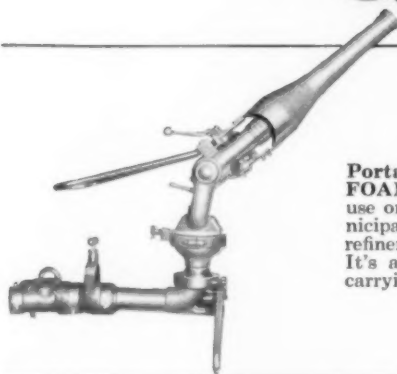
**Remote Hydraulic Control Single Type FFF FogFOAM Turret Nozzle** on Type 0-10 U. S. Air Force crash rescue fire fighting truck. Similar turrets can be supplied for oil refineries, chemical and industrial plants and municipalities. Hydraulically operated dual turrets also available.



**Remote Manual Control Type FFF FogFOAM Turret Nozzle** provides efficient operation of turret from driver's seat within truck cab — for small municipalities, airports or industrial properties where limited personnel is available.



**Direct Manual Control Dual Type FFF FogFOAM Turret Nozzles** — can be operated directly by firemen from cab roof.



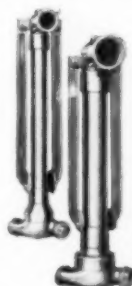
**Portable Type FFF FogFOAM Turret Nozzle** for use on fire hose lines by municipal fire departments, oil refineries and industrial plants. It's arranged for convenient carrying on fire trucks.



## WaterFOG Equipment



**Type SG-48 WaterFOG Nozzle.** Easy to handle. Discharges high or low velocity WaterFOG or straight water stream.



**Lightweight Rotating Cellar and Attic Pipe.** Fights fires in cellars, attics, under piers, bridges, etc.



**Type N22 WaterFOG Nozzle.** Discharges high velocity WaterFOG. For general use around live electrical equipment.



**Type N23 WaterFOG Nozzle with Swivel Handles.** Discharges high velocity WaterFOG with higher discharge and greater range than Type N22 Nozzle.

# ROCKWOOD SPRINKLER COMPANY

*Engineers Water . . . to Cut Fire Losses*

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# TECHNIQUES OF FIRE FIGHTING

**FOUR BASIC principles govern the control of fire and reduction of losses to life and property:**

- Fire prevention engineering
- Early detection and extinguishment
- Damage control — limiting damage due to fire and fire extinguishment
- Prevention of personal injuries from fire or panic

## CAUSES OF FIRE

The majority of fires in industry can be traced to four general causes:

1. **Open flames, high temperatures**—Stoves, furnaces, ovens, welding and cutting, lamps, dryers, heated pipes and surfaces, matches, smoking.
2. **Friction**—Hot bearings, belts, cutting, grinding.
3. **Electricity**—Defective wiring, arcs, sparks, heat resistance, static electricity.
4. **Chemical reactions**—Spontaneous ignition, use of reagents, acids, oxidizing agents.

## EXTINGUISHING METHODS

Many types of apparatus are available for various risks but all extinguishing methods are based on elimination of one of the three components of fire:

1. Eliminate oxygen from the air.
  - Replace air with inert gas.
  - Exclude air with a non-combustible cover.
  - Use a chemical which will dilute the oxygen in the air below the point required to support combustion.
2. Remove or shut off fuel supply.
  - Shut off flow in liquid or gas supply lines.
  - Remove burning fuel.
3. Reduce temperature below ignition point.
  - Cool burning material with water or chemicals.

**Fire prevention engineering.** The services of a qualified fire prevention engineer will often be helpful in planning both prevention and protection.

First step is a survey of the plant—layout, manufacturing processes, materials handled, storage methods, and fire protection facilities.

With this information, plans can be made for improving structure and layout, installing additional equipment where needed, and training employees in prevention and extinguishment.

**Water Supply.** Water is the most widely used and effective extinguishing medium for most types of fires. Important exceptions are those with electrical equipment, flammable liquids, and in materials where water damage would be excessive.

In determining supply requirements, structural conditions and processes must be considered and the number of streams that might be required to cope with a blaze.

**Pumping equipment** should be able to supply enough streams at adequate pressure. Allowance should be made for pumps out of service for repairs and for continuity of pumping in event of power failure.

**Hydrants** should be located throughout the plant area so as to give adequate coverage of all buildings, and preferably not more than 50 feet from any building.

Systematic maintenance is essen-

tial. When hydrants are installed, attention should be given to drainage to minimize the danger of freezing in cold weather. Hydrants should be kept clear of snow and a thawing device provided.

**Standpipe and hose** provide effective protection inside buildings when used by men trained in handling heavy streams. They are a valuable auxiliary to the city fire department. Piping should be of sufficient size for buildings of more than four stories.

**Couplings.** All outside hydrant nipples and hose couplings should be of the American Standard 2½-in. fire hose thread.

For outside use, 2½-in. single-jacketed rubber-lined hose is ordinarily used. It is flexible and light in weight. Double jacket hose is used principally for the rougher service in municipal fire departments.

Rubber-covered hose is sometimes needed where there is exposure to fumes or corrosive liquids. Neoprene has been found superior to natural rubber for fire hose.

The 1½-in. hose is useful for small



Several types of fire protection appear in this picture: fire door, standpipe with hose, fire buckets with rounded bottoms to prevent other use, and hand extinguishers. Extinguisher is also carried on battery cart. Manually operated alarms are on wall at right.

fires and for wetting down fires after the blaze is under control. It can be handled by one or two men.

**Playpipes and nozzles.** Standard underwriters' playpipes throw an effective stream but are difficult to handle, particularly on ladders. The short rigid playpipes with strap and ladder hook, with shut-off nozzles to prevent excessive water damage, are more suitable for plant use.

Adjustable spray and straight stream nozzles (for both 2½- and 1½-in. hose) give water curtain protection for firemen and blanketing effect. They also provide solid streams for penetration.

**Water spray (fog) nozzles** are effective for oil fires. Water fog, owing to its low conductivity, can be used safely on electrical fires. Its effective range is limited to a few feet but this can be offset to some extent by using applicator pipes of varying lengths.

**Foam-generating equipment** is used where large quantities of flammable liquids are stored. For some exposures permanent generating equipment should be installed.

Foam systems may be either automatic or manual in operation. There are two types of foam, chemical and mechanical.

Chemical foam is formed by a chemical reaction in which masses of bubbles of carbon dioxide gas and a foaming agent produce an expanded froth.

Mechanical foam consists of bubbles of air produced when air and water are agitated mechanically with a foam solution.

## TYPES OF FIRES

Fires have been classified by underwriters and manufacturers in three main groups.

**Class A.** Fires in ordinary combustible materials, such as wood, paper, textiles, and rubbish. They require quenching or cooling effects of water or solutions containing large proportions of water.

**Class B.** Fires in flammable liquids, such as gasoline, solvents, oil, grease, paint, varnish and lacquers, where blanketing or smothering effect is essential.

**Class C.** Fires in electric equipment, such as motors, generators, and switch panels. These require a non-conductive extinguishing agent.

Fires in motor vehicles, aircraft and motorboats have the same problems of extinguishment as Class B but equipment must be portable. Extinguishing agents must be non-freezing.

## LIMITING FIRE AREAS

**Fire Doors and Shutters.** For large buildings, fire-resistive partitions with fire doors are important in confining fire to a limited area. Several types of doors with varying degrees of resistance have been approved by testing laboratories.

Fire doors should either close automatically each time they are opened or be closed by a heat-actuated device if fire should break out. The most common device is the fusible link.

The releasing device should be located where it will be affected quickly by heat passing through the doorway and it should be protected against mechanical injury.

Where flash fires may occur, quick operating devices are preferable, except for doors used as exits.

**Fire shutters** are used for windows where there is an exposure hazard from adjacent buildings. Shutters may be of the swing type (tin clad or steel) or rolling steel. The latter type can be installed where space is too limited for swinging shutters.

Sliding shutters are not recommended where snow and ice might interfere with their operation.

## WETTING AGENTS

Wetting agents added to ordinary water increase its penetrating power. This "wet" water has proved effective in extinguishing fires in dry, dusty materials, such as hay, decayed leaves in forests, peat, cotton bales and other lightly compressed materials. In such fires a penetrating action is needed and it cannot be obtained by the velocity of the extinguishing stream.

The wetting agent and water can be mixed in pump tanks and booster tanks. A proportioner is needed for use in hose lines.

Wetting agents have certain limitations. When used in hand extinguishers they may cause the stream to spray and reduce its range.

Inhibitors are used with agents to prevent corrosion of metal containers. For tanks, a lining of asphalt or other protective coating should be used.

## SOURCES OF INFORMATION

Specific and accurate advice on fire problems may be obtained from fire insurance carriers, local insurance inspection bureaus, municipal fire departments, National Fire Protection Association, National Board of Fire Underwriters, Underwriters' Laboratories, Associated Factory Mutual Laboratories, and other recognized agencies.

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Specially Designed Containers and  
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ALL THROUGH THE PLANT

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A choice of six different  
types of fire preventive  
containers, which fit  
smoothly and easily into  
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tions. Sizes and types  
available from small parts  
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treadle dip tanks.



## Swabbing and Small Parts Cleaning

Plunger cans with a choice in  
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speed production  
—one hand holds  
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moistens swab and  
cleans in one mo-  
tion. Bench Cans  
and Touch-Up  
Cans are also  
available which  
occupy little bench  
space and are  
convenient for  
instant use.



## Large Parts Cleaning

Foot Treadle Operated  
Dip Tank is work-high  
with self-closing cover  
operated by foot treadle.  
Safety air check cush-  
ions accidental fall of  
cover on operator's  
hands. Ideal for washing  
large parts. 24 1/4" long  
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complete protection throughout the plant. Fill in coupon and  
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# HANDLING FLAMMABLE LIQUIDS

**THE NATIONAL** Fire Protection  
Association divides flammable liquids  
into three classes according to flash  
points, closed-cup test:

### Class I. Below 25 F:

Ethyl ether, acetone, carbon disul-  
fide, gasoline, benzol, collodion.

### Class II. 25 to 70 F:

Amyl acetate, ethyl alcohol, toluol,  
ethyl acetate, varnish.

### Class III. 70 to 200 F:

Stoddard solvents, kerosene, amyl al-  
cohol, creosote oil, turpentine, fuel oil.

Portable containers for Class I and  
Class II liquids should be painted  
red.

Safety cans, painted red and with  
self-enclosing spout are available in  
several types in pint to gallon ca-  
pacity. The larger sizes are equipped  
with flame arresters to prevent  
flashbacks.

If several different flammable  
liquids are handled in one depart-  
ment, stripes or distinct lettering  
should be placed on the cans to avoid  
mixing liquids.

Containers for Class III liquids  
should be painted green with the  
warning label on the sides: "Flam-  
mable liquid—Keep fire away. Store  
outside building."

Containers should be kept clean so  
that the color and lettering will not  
be obscured.

Tank cars, storage tanks, tank  
trucks, connecting pipes and hose  
lines and filling nozzles should be  
interconnected with a bonding wire  
before an attempt is made to open

connections during loading or un-  
loading.

When flammable liquids are  
poured from one container to an-  
other, the lip of one container should  
rest on the edge of lip of the other.  
The two should be kept in contact  
during pouring and the receiving  
vessel should rest on a grounded  
surface.

Transfer pumps of approved de-  
sign should be used when quantities  
of flammable liquids are handled.  
These pumps are self-priming and  
equipped with flame arresters and  
protected openings for pressure and  
vacuum relief.

## Where to Smoke?

Smoking is a problem wherever  
people are employed, both from the  
standpoint of fire hazards or time  
taken off the job. But the habit is  
widespread and must be considered  
from the industrial relations angle  
as well as safety.

Where flammable materials are  
handled, smoking cannot be permit-  
ted. Where there is no fire or explo-  
sion hazard, management, supervi-  
sion and workers can work out the  
details.

Prohibition of smoking is not al-  
ways the cure. It may lead to em-  
ployees sneaking a smoke, perhaps  
in a hazardous spot.

Smoking areas near the work  
place, with reasonable time for re-  
laxation, has been the answer in  
many plants. Supervision is needed  
to prevent the relaxation from being  
overdone.

Receptacles for disposing of cigaret  
butts and pipe ashes should be  
placed at the entrance to any depart-  
ment where smoking is not allowed.  
In some hazardous areas employees  
are required to check matches and  
materials as they enter.

Chewing tobacco, while free from  
fire hazard, is objectionable from the  
standpoint of cleanliness and hygiene  
because of the inevitable accompani-  
ment of spitting. In operations such  
as food processing, where scrupulous  
cleanliness must be observed, chew-  
ing tobacco is not allowed.

Cuspidors, a necessary evil, should  
be provided and cleaned regularly.  
Disposable cuspidors have obvious  
advantages in maintaining house-  
keeping.



Safety can being filled with flammable liquid.  
Wire bond connects storage drum and can.  
It is also advisable to have bonding wire or  
receiving container grounded.



# NEW!

## *Fyr-Fyter* stainless steel PRESSURIZED Water Extinguisher



**4 LBS. LIGHTER!**

**SIMPLE, EASY to OPERATE!**

**SQUEEZE VALVE CONSERVES CHARGE!**

Now . . . Fyr-Fyter announces the first stainless steel, pressurized water extinguisher! It is 4 pounds lighter than any other 2½ gal. brass model, and ideal for fire hose or extinguisher cabinets in schools, institutions, hospitals and industrial plants . . . especially where women may be required to extinguish a fire! You get into action faster with the Fyr-Fyter Pressurized Water extinguisher! Just point the hose at the fire, and a press of the thumb . . . instantly releases a controllable 45 ft. stream of water! Release the lever and the pressure is shut off. You use only the amount of the charge necessary to meet the demands of the fire!

This modern, efficient extinguisher can be repressurized with free air at an automobile service station or nitrogen from Fyr-Fyter's Dry Nitrogen Recharge Units. Visual gage tells at a glance the operating condition of the extinguisher. No annual recharge necessary!

The Fyr-Fyter Pressurized Water extinguisher is constructed of durable, permanent-lustre stainless steel and is pressure tested to 500 lbs. per square inch. It has Underwriters' Laboratories A-1 rating and is recommended for heated areas and where water is considered an adequate extinguishing agent.

**WRITE FOR COMPLETE INFORMATION TODAY,  
OR CONTACT YOUR FYR-FYTER REPRESENTATIVE!**

FF-9

# The *Fyr-Fyter* Co.

(FIRE) (FIGHTER)

221 CRANE STREET, DAYTON 1, OHIO

REPRESENTATIVES IN PRINCIPAL CITIES

OUR 40th YEAR OF MANUFACTURING...THE MOST COMPLETE LINE IN INDUSTRY

BRANCH OFFICES: NEW YORK, BOSTON, PHILADELPHIA, CHICAGO, ATLANTA, DALLAS, SAN FRANCISCO, PORTLAND, SEATTLE

National Safety News, March, 1956



#### TYPES OF EXTINGUISHERS

Left to right:  
Hand pump  
Foamite  
Vaporizing liquid  
Dry chemical  
Carbon dioxide

Soda-acid, gas cartridge, and loaded stream extinguishers resemble foam extinguisher in appearance. All are plainly marked and carry directions.



## FIRST-AID EXTINGUISHERS

**PORTABLE EXTINGUISHERS** are the plant's first line of defense against fire. They can be brought into action in the vital minutes before the company or city fire brigades can reach the blaze. Prompt use by employees on the scene has prevented vast amounts of both fire and water damage.

#### Types and Uses

Common types of extinguishers are:

1. Soda-acid
2. Vaporizing liquid
3. Carbon dioxide
4. Foam
5. Dry chemical
6. Gas cartridge
7. Hand pump

Some extinguishers are available in both hand and wheel types. The wheel type is easily moved and has the extra extinguishing capacity needed for severe exposures.

#### FOR CLASS A FIRES ONLY

These extinguishers should be used only on Class A fires in ordinary combustibles.

#### Soda Acid

This type of extinguisher is filled with a solution of bicarbonate of soda. A bottle in the top contains sulfuric acid. When the extinguisher is turned upside down the chemicals mix, forming a gas which propels a stream of water.

Most soda-acid extinguishers have a capacity of 2½ gallons. They provide a stream of 30 to 40 feet, lasting about one minute.

#### Gas Cartridge

Looks much like a soda-acid extinguisher and operates the same way except that when inverted it must be bumped on the floor. This drives a pin into the cartridge, releasing the compressed gas which forces water through the hose. The extinguisher may contain either plain water or anti-freeze solution.

#### Pump Tank

Made in 2½ and 5-gallon sizes. Plain water or a non-freezing solution can be used. Hard pumping will force a stream 30 to 40 feet. It is difficult to use while being carried. It can be refilled by another person when the operator is using it.

#### FOR CLASS A AND CLASS B FIRES

These extinguishers are suitable for use on Class A fires in ordinary combustibles and Class B fires in flammable liquids. They should not

be used for fires in electrical equipment.

#### Foam Extinguisher

Shaped like the soda-acid and is operated the same way. In the outer part of the extinguisher is a solution of water, bicarbonate of soda and a foam making ingredient. Inner chamber contains water and aluminum sulphate.

When the extinguisher is turned upside down the chemicals mix and force out a foaming stream. The extinguisher contains 2½ gallons of liquid and generates eight times that amount of foam.

Foam extinguishers also come in 10-, 20- and 30-gallon wheeled units.

#### Loaded-Stream

Looks and operates like the gas cartridge type. Instead of water it contains a special solution of an alkali-metal salt.

#### FOR CLASS B AND C FIRES

These are the only extinguishers which may be used safely on Class C fires (electrical equipment) as well as flammable liquid, or Class B, fires. They do not contain water.

#### Vaporizing Liquid

The one-quart size is one of the most familiar types. Carbon tetrachloride is the extinguishing agent. It is operated by pumping the handle. In contact with heat the liquid turns into a heavy vapor which blankets and smothers fires. In addition, vaporizing liquid works effec-



Plant guard makes out report on condition of extinguishers. (Caterpillar Tractor Co.)



## WHAT HAPPENS NEXT?

*If management has been wise, a fire tragedy will be stopped before it starts...if not, in 20 minutes extensive destruction and total loss could readily be the result.*

First-rate fire protection is essential to the continued success of any business. With C-O-TWO Smoke or Heat Fire Detecting Systems, plus C-O-TWO High Pressure or Low Pressure Carbon Dioxide Type Fire Extinguishing Systems, as well as PYRENE Air Foam Type Fire Extinguishing Systems for specific outdoor locations, your plant can have fast, positive round-the-clock fire watchman service simultaneously at each fire hazard point... a fire tragedy is stopped before it starts.

Furthermore, there is a personal sense of responsibility inherent with PYRENE—C-O-TWO Fire Protection Engineers that assures you of fully adequate firesafety... a definite plus in your behalf. Whether it's fire detecting or fire extinguishing... portables or built-in systems... PYRENE—C-O-TWO means top quality backed by experienced engineering that results in operating superiority for you at all times.

Act now... don't take unnecessary chances with your investment any longer... the extensive experience of PYRENE—C-O-TWO over the years is at your disposal without obligation. Remember... a plant-wide fire protection survey skillfully executed today could be the means for greater profits tomorrow.



**PYRENE — C-O-TWO**  
NEWARK 1 • NEW JERSEY

Sales and Service in the Principal Cities of United States and Canada



### COMPLETE FIRE PROTECTION

portable fire extinguishers... built-in fire detecting and fire extinguishing systems

CARBON DIOXIDE • DRY CHEMICAL • VAPORIZING LIQUID • SODA-ACID • WATER • CHEMICAL FOAM • AIR FOAM

tively on Class A fires. Range is about 20 feet and stream lasts 45 seconds.

Larger units of ½- to 3-gallon capacity are operated by stored gas or air pressure.

### Carbon Dioxide

Discharges gas through a horn-like nozzle by operating a hand wheel, squeeze grip or trigger type mechanism. These extinguishers are available in a wide range of sizes, containing from 2 to 750 pounds of carbon dioxide. The larger units are mounted on wheels. The gas is non-corrosive and leaves no residue.

Successful operation requires a close approach to the fire.

### Dry Chemical

Operates by squeezing a handle or turning a hand wheel at the top, which punctures a cartridge of carbon dioxide in the neck of the extinguisher. This forces bicarbonate of soda out through the hose. The powder is treated to prevent caking.

The 15-, 20-, 25- and 30-pound sizes have a range of 10 to 12 feet. The 140- and 300-pound extinguishers can discharge a stream of 35 to 45 feet or a fan shaped stream of shorter range.

**Protection from Freezing.** Carbon dioxide, vaporizing liquid and dry chemical extinguishers will not freeze.

Soda-acid and foam extinguishers should be installed in heated cabinets.

Gas cartridge extinguishers, pump tanks and fire pails use calcium chloride solutions.

**Recharging.** Commercial carbon tetrachloride should not be used for vaporizing liquid extinguishers. It may cause deterioration of the shell and interior mechanism. Vaporizing liquid furnished by manufacturers is treated to remove impurities and to depress the freezing point.

Before recharging soda acid and foam extinguishers, the shells and all parts should be thoroughly rinsed with warm water.

### Placement of Extinguishers

An extinguisher may be useless if an employee must spend valuable minutes looking for it, or if it is blocked by piles of materials. Here are six recommended rules.

—Locate extinguishers close to likely fire hazards but not so close that they will be in the fire zone should fire occur.

—Place extinguishers so access will not be blocked by fire.



Extinguishing fires in burning metal has been added to the Philadelphia Fire Department's techniques. Here an officer is being instructed in extinguishing a magnesium fire. (Ansul Chemical Co.)

- Install enough extinguishers to deal with any expected blaze, considering the rapidity with which it might spread, intensity of heat, etc.
- Mark locations conspicuously.
- Identify each unit for the type of fire it is designed to combat.
- Protect extinguishers from traffic.

**Marking locations.** Contrasting backgrounds make extinguishers conspicuous and less likely to be overlooked in the excitement of a fire. Methods include:

- Painting a large red or white background on the wall.
- A large red spot on the floor under the extinguisher.
- Vertical red bands with yellow borders down a wall or column where equipment is placed.
- Lights of distinctive color which do not conflict with exit lamps.

### Look for the Label

Every approved extinguisher carries the label of Underwriters' Laboratories. It also carries:

- Type of extinguisher.
- Type of fire for which it is recommended (Class A, B, or C).
- Instructions for use.
- Unit rating.
- Instructions for inspecting and recharging.

An approved extinguisher must have adequate capacity. A vaporizing liquid extinguisher must contain not less than one quart of the extinguishing agent to meet recognized standards.

### How Many Extinguishers?

The number of portable units required should be based on recommendations of state or local authorities or insurance carrier.

In no case should it be necessary for a person to travel more than 50 feet to the nearest unit.

Following are suggestions for exposures of varying severity:

**Class I—Light hazard.** Small amounts of combustibles and only small incipient fires anticipated.

This class includes offices, schools (exclusive of trade schools and shops), public buildings, etc.

At least one unit shall be required for each 5,000 square feet of floor area.

**Class II—Moderate Hazard.** Ordinary combustible occupancies, where incipient fires of average severity may be anticipated.

This class includes department stores, warehouses, miscellaneous manufacturing of average hazard, etc.

At least one unit shall be required for each 2,500 square feet of floor area.

**Class III—Extra Hazardous.** Where because of character or quantity of combustibles, extra severe incipient fires may be anticipated.

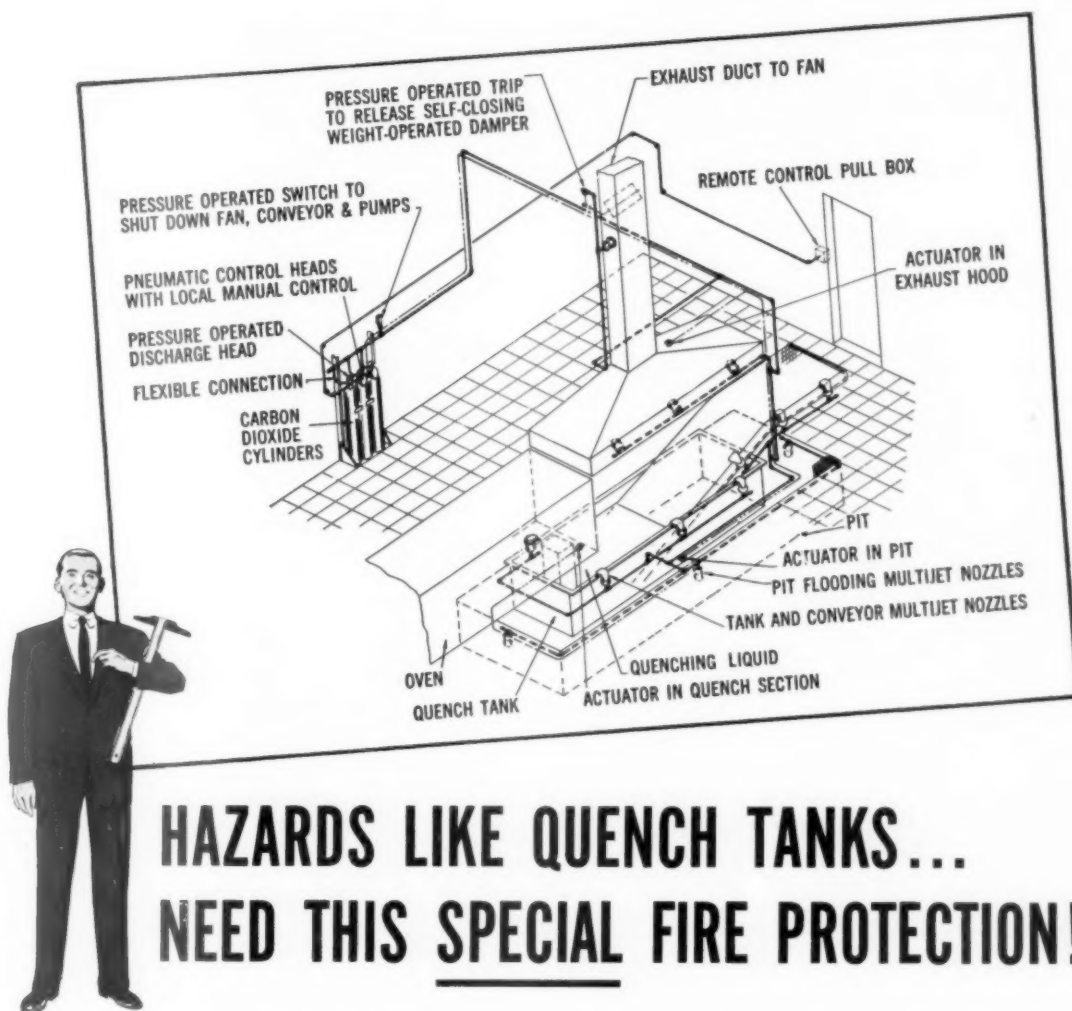
This class includes woodworking, paint spraying and dipping operations, etc.

At least one unit shall be required for each 2,500 square feet of floor area, plus additional units as directed by the inspection departments having jurisdiction.



Fire blanket in steel case mounted in area where flammable materials are handled can smother clothing fires effectively.





## HAZARDS LIKE QUENCH TANKS... NEED THIS SPECIAL FIRE PROTECTION!

IN THE PLAN ABOVE, you see a typical Kidde fire extinguishing system installation for the protection of one of industry's most dangerous fire hazards. However, *all* Kidde quench tank installations are not exactly like this one, since Kidde treats each quench tank as a *special* hazard which requires *special* fire protection!

Using safe, efficient carbon dioxide, Kidde systems snuff flames quickly, cleanly. The CO<sub>2</sub> leaves no mess to harm machinery or equipment, will not even damage work-in-process. And, thanks to patented Kidde rate-of-temperature-rise detectors, Kidde systems remain on guard 24 hours a day, completely independent of outside power sources.

Kidde systems use no clumsy mechanical triggering methods, have no falling weights. Pneumatic or Electrical Control Heads insure instant and complete CO<sub>2</sub> discharge. The moving parts of a Kidde

system are self-enclosed for safety, need no replacement after a fire, have easy-to-read visual indicators which show at a glance if system is "set" or "released." What's more, special Directional Valves on the Kidde system let you protect more than one hazard from the same cylinder bank, giving you the most versatile protection on the market today!

Without obligating yourself in any way, let the Kidde man analyze the fire hazards in your plant. Then let him show you our recommendations. For more information, write Kidde today.

# Kidde

The words "Kidde", "Lux", "Lux-O-Matic", "Fyre-Freez" and the Kidde seal are trademarks of Walter Kidde & Company, Inc.

**Walter Kidde & Company, Inc.**  
345 Main Street, Belleville 9, N. J.

Walter Kidde & Company of Canada, Ltd., Montreal—Toronto



# AUTOMATIC PROTECTION

## Detection and Alarm Systems, Automatic Sprinklers

### DETECTION AND WARNING

**WHETHER** it be the factory whistle or an elaborate automatic system, a definite fire alarm system is a part of the fire protection program in most plants.

To avoid confusion with the regularly used whistles, special whistles or sirens are often used.

Plants in areas where municipal fire departments are available usually have an alarm box near the entrance or located in one of the buildings.

Others may have auxiliary alarm boxes at various points in the plant.

Another system is a direct connection to the nearest fire station which may register by a water alarm system or be set off manually.

### SIGNAL SYSTEMS

Signal systems of various types detect fires and give alarms, and supervise sprinkler systems, water supplies, and watchmen's service.

These systems are operated on three main plans:

1. **Central station system.** Signals are transmitted to an independent central station where they are recorded and proper action for the emergency taken. The central station may serve several companies.

2. **Proprietary system.** Similar to a central station but controlled and operated by the owner of the protected property.

3. **Local system.** Owned and operated by the protected company but does not have an operator constantly on duty at a central station.

### DETECTORS AND ALARMS

Fire detection and alarm devices operate on the mechanical, pneumatic-electric, straight electric, and electronic principles.

Some of the newer types are based on some form of electronics in conjunction with thermostats. These are more sensitive than the earlier types.

Electronic devices have been installed on ships where air samples from the cargo holds are drawn through a cabinet past an electric eye or gas analyzer which detects

smoke instantly and sounds an alarm. Detectors of this type can be used in many industrial locations.

Where fires may start slowly and smolder for some time, photoelectric equipment often detects smoke before heat-actuated devices are affected.

**Watchmen's supervisory systems** transmit and record signals made at watchmen's key stations. This system is frequently combined with fire alarm systems. A plant guard's failure to check in at any station along his route is promptly recorded at the control desk or panel.

Such supervision has checked many incipient fires, prevented many robberies and brought aid to watchmen rendered helpless by accident or sudden illness. It has also prevented much water damage by sprinklers.

## AUTOMATIC SPRINKLERS

**BECAUSE** they have proved so effective in controlling fire losses, installations of fixed systems—particularly automatic sprinklers—generally are rated as the most important means of defense against fire.

For reliable protection, sprinklers are needed wherever there is an appreciable amount of combustible material either in the building or its contents. Even fireproof buildings need sprinklers to protect burnable contents and prevent damage to the structures.

Sprinklers should be located not only to protect the ceiling but also under wide benches or tables, in closets, dryers, and other locations shielded from the discharge of ceiling sprinklers.

This extra coverage is important because the heat from a fire in the unprotected area would open many more sprinklers, causing drain on the water supply and excessive water damage.

Essential parts of a sprinkler are a nozzle, a releasing device, and a deflector. The releasing device in most sprinklers is a soldered link element.



Automatic fire protection in the home of United Nations, New York. Protection equipment controlled from headquarters includes 212 watchman stations, 100 security stations, 117 fire alarm stations, 308 fire gongs, and 58 traffic signals. (B. Eichwald & Co.)



## Protect your plant with the same Ansul extinguishers that guard this big steel mill

Well-planned safety and fire prevention programs are doing their share to protect lives, property and production schedules at the Great Lakes Corporation, Detroit, Mich., division of National Steel Corporation. Ansul fire extinguishers are playing a part in this successful program.

Your safety program deserves the best in fire protection. Remember, fire doesn't give you a second chance. Here are three big reasons why Ansul dry chemical extinguishers can take the worry out of your fire protection program and help you maintain a safety record to be proud of:

*First.* Ansul extinguishers are *dependable*. They are always ready for action, even under severe exposure conditions. Weather-tight construction assures this

*dependability. Second.* Ansul extinguishers are *effective*. Patented nozzles deliver either a straight or fan stream, depending upon the hazard. This is an Ansul exclusive for more effective fire control. *Third.* Ansul extinguishers are backed by a *five-year warranty*. This is the best way we know of saying that Ansul extinguishers are the finest of their kind made anywhere. No other manufacturer offers this important warranty.

Get in touch with your local **ANSUL MAN** through the yellow pages of your phone directory, or write direct to **ANSUL CHEMICAL COMPANY, DEPT. NS-3, MARINETTE, WISCONSIN.**



**BLOCK THE SPREAD OF  
FLAMES AT ALL OPENINGS**

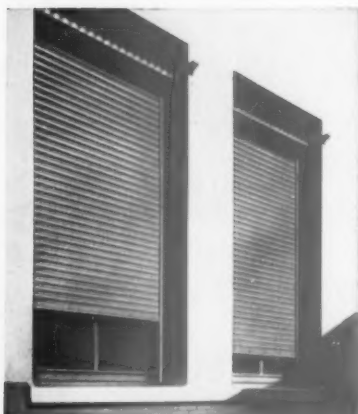
**CUT OFF DRAFTS**

**DEFY FLAMES**

**Made ONLY by KINNEAR**



# Akbar ROLLING FIRE DOORS



Kinnear Akbar Window Shutters



Akbar Fire Door installed in a corridor

Kinnear all-steel Akbar Fire Doors are the positive, automatic means of blocking off flame-spreading drafts.

Coiled out of the way above the door lintel, Akbar Fire Doors go into action immediately when fire threatens. A strong spring insures positive action. Controlled speed provides added safety for building occupants. Akbar Doors may be opened instantly for emergency exit. They automatically close again at once. A special locking device stops the downward action of Akbar Doors at sill level . . . even if the floor is completely burned out. Akbar Rolling Fire Doors can save as much as one third their cost per year in reduced insurance rates.

Akbar Fire Doors may be equipped for daily use with manual or motor operation.

**LARGE SIZES:** Kinnear makes doors for firewall openings ranging up to many hundred square feet in area. These doors are built with the same features offered in the labeled doors described above. **WRITE FOR DETAILS!**

**The KINNEAR Manufacturing Co.**

FACTORIES:

1720-40 Fields Ave., Columbus 16, Ohio  
1742 Yosemite Ave., San Francisco 24, Calif.

SAVINGWAYS  
IN  
DOORWAYS

**KINNEAR**  
ROLLING DOORS

Another type uses a quartz bulb containing a liquid that expands when heated and bursts the bulb.

A third type uses a low-fusing chemical that liquefies at the rated temperature and allows a strut to collapse.

Various types of heads are available for use under a wide range of temperature conditions. Heads of too high a rating are slow to operate. A fire would gain considerable headway and open more heads than needed. Soldered links with too low a rating may become weakened and operate prematurely.

For normal room temperatures up to 100 F., ordinary sprinklers are used. Where temperatures are higher, thermometer readings should be taken near the ceiling and ratings selected accordingly.

In the few cases where sprinklers have failed to function when needed, the fault has rarely been due to the sprinkler mechanism. Deficient water supply, freezing, defective dry pipe valves, foreign material in the system, corrosion, obstruction of sprinkler heads by stock piles, or paint on the sprinkler heads are among the causes.

**Wet-pipe systems** are used for most installations. Water is maintained under pressure right up to the sprinkler heads and operation is immediate. This type can be used only when pipes are protected against freezing.



Main control board of a typical fire detection alarm system. A fire signal from any area of building is received and analyzed. Board then causes alarms to sound. Area containing fire is registered on strategically located visual indicators and alert is flashed to municipal fire department. Small bell and box above comprise battery-powered auxiliary electrical supply. (Walter Kidde & Co.)



**Dry-pipe systems** are used where there is danger of pipes freezing. Air under pressure instead of water, is maintained in the pipes. Opening of a sprinkler head releases the air pressure, resulting in the operation of a valve admitting water to the system. There is a slight delay between the opening of the sprinkler head and the discharge of water.

After a fire, sprinkler heads should be replaced promptly.

#### SPRINKLER SUPERVISION

Flow of water in the system can be used to sound an alarm for fire and accidental leakage. The alarm check valve installed in a sprinkler riser can be arranged to ring a hydraulic gong or an electric bell or both.

A less expensive type, the water-flow indicator, is a paddle-like vane projecting into the piping. An electric bell sounds when the vane is deflected by flow of water.

Water-flow alarms are especially desirable where building contents are particularly susceptible to fire or water damage. They are useful supplements to watchman service.

Where central station supervisory service is available, water-flow alarms are transmitted to headquarters, which calls the fire depart-

ment and sends a man to the plant to investigate.

#### SPECIAL SYSTEMS

For special risks, automatic systems employing carbon dioxide, foam or water spray nozzles may be installed.

**Carbon dioxide** is particularly desirable where the system operates in an enclosed space and the value of the contents is high and subject to water damage. Carbon dioxide can be discharged either manually or automatically by means of heat-actuated devices.

Devices are also provided for closing shutters, doors, windows and dampers and stopping blowers to confine the extinguishing gas. These systems are suitable for spaces containing electric equipment or flammable liquids.

**Foam installations** are suitable for tanks and operations involving flammable liquids but not for electric fires. They are usually arranged to operate automatically with provision for manual operation.

**Water spray systems** are used to protect oil-filled electric equipment, such as transformers, oil switches and oil piping and open tanks of flammable liquids. Water spray systems require expert installation.

Other systems for limited and specialized occupancies use vaporizing liquid, steam and inert gases. For processes like paint dipping and tank operations using flammable liquids a manually or automatically operated cover is an effective means of extinguishment.

#### OBSTRUCTED PIPING

A plant's fire protection system may be crippled in an emergency when scale, stones, or other foreign material are allowed to enter or remain in the sprinkler system. Should a fire occur, the discharge from the sprinkler heads would be insufficient to check the blaze.

Regular examinations can determine whether the system contains an excessive amount of foreign material. Methods include observations of the flow from the test connection on top of the system, drain tests at sprinkler risers, or hydrant flow tests.

Uncoupling the piping at strategic points and examining the interior, or test flushing of representative feed or branch lines will reveal the presence of obstructions. Examination may show individual sprinklers to be clear but that does not necessarily mean the branch lines are clear.

#### OILY WASTE CANS



for old rags or combustible material. Underwriters approved.

From 6 to 25 gallons.

#### SAFETY CANS



for easy handling of flammable liquids. Underwriters labeled. In 1

pint to 5 gallon sizes.

#### DISPENSING PLUNGER CANS

for sponging and cleaning with flammable liquids.

In 1 quart, 1/2 gallon and 1 gallon sizes. Approved by Factory Mutuals.



#### SAFETY EXTENSION LIGHT

(#1727-S) — for safe inspection of storage or operating equipment . . . 15" or 30" extensions for lighting inaccessible areas. Underwriters approved.



#### SAFETY FLASHLIGHT



(#1717-S)—for use in group D, class 1 hazardous locations. Fully insulated. Underwriters Lab. approved.

#### SAFETY LANTERN



(#2144-S) 6 volt — for use in hazardous locations. Wire guard and stand. Safety kick-out bulb sockets. U.I. approved.

#### SAFETY HEADLIGHT



(#1904-S) — with belt clip for case and padded headband for light. Fully flexible with 1,500 ft. beam. Leaves both hands free.

FOR EXTRA PROTECTION  
**JUSTRITE**  
SAFETY CONTAINERS AND LIGHTS

#### SAFER! BECAUSE THEY'RE STRONGER

**JUSTRITE SAFETY CANS:**—A maximum (15 lb.) lead coating on copper bearing steel prolongs the life of the Justrite Safety Can. "Double lock-seam" construction assures an unstretched coating of uniform thickness, inside and out. Reinforcing ribs strengthen body of the can. Cast malleable spout with self-adjusting cover will take hard use and keep contents safe. A cast Spout Lip aids pouring, helps discharge "static."

**JUSTRITE SAFETY LIGHTS:**—Heavy gauge, rust-proofed metal construction of lanterns and headlights. Seamless, cement free, construction of plastic flashlight cases. Exceed the requirements of Class 1, Group D.

#### ORDER FROM YOUR JOBBER

For free catalog write Dept. NSN.

**JUSTRITE MANUFACTURING CO.**  
2061 N. SOUTHPORT AVE., CHICAGO 14, ILL.

## Dry Chemical Effective For Dust Fires

Severe dust conditions have caused many disastrous fires and explosions in grain elevators, starch plants, candy factories, bakeries, wood finishing plants, and coal pulverizing locations.

Most materials which burn at a moderate rate when they are in large particles burn with almost explosive rapidity when finely divided.

This is because the finer particles have a much greater surface area in relation to the amount of material

in the particle which has to be heated to combustion temperature. When all of these surfaces are exposed to the air and a spark or other source of ignition is present, rapid combustion occurs which builds up high pressure very quickly.

If the dust is not suspended but is lying dormant as on a floor, roof or beam, a smoldering fire will often result. However, if the extinguishing agent stirs the particles into a dust cloud, an explosion can result. Thus, large losses have been incurred in mills, with most of the damage due to secondary explosions

caused by agitation of dust layers by the first explosion or by extinguishing streams.

Tests conducted by the Ansul Chemical Company engineers showed the value of an extinguishing agent which will provide a non-combustible opaque coating on combustible dust particles. In addition, the agent must be able to be applied so that dust clouds are not formed, or where dust agitation is unavoidable, the extinguishing agent must be able to inert the dust cloud as it is formed.

It was found that dry chemical not only does this but also can be used for inerting dusty room interiors to reduce the explosion hazard. This is done by discharging a dry chemical extinguisher into the room so that the chemical settles over beams, ledges and other places where dust may settle.

Good housekeeping is a "must" in any location subject to combustible dust conditions. Efficient dust collecting systems, dust-tightness of handling equipment and elimination of ledges and other collecting surfaces will do much toward the elimination of secondary dust explosions. Explosion-venting windows, hatches, roofs and panels will reduce explosion damage to buildings.

Water extinguishing equipment, where necessary for complete extinguishment of embers, should be of a type which will provide the water in a fine spray or fog for gentle application to the dust.

## For POSITIVE PROTECTION at your loading racks



install

*Gilbarco*



Electronic  
Ground  
Indicators

**No loading rack should be without this POSITIVE INDICATION OF PROPER GROUNDING against static electricity.**

Bulk Plants, Chemical Terminals, Tank Farms, Marine Terminals — wherever there is loading and unloading of volatile liquids, the Gilbarco Electronic Ground Indicator assures POSITIVE protection — POSITIVE indication of proper grounding.

**IT'S SAFE** — eliminates the ever present source of danger at all loading racks — faulty grounds which lead to FIRE.

**IT'S SIMPLE** — Gilbarco's indicator is installed in the normal grounding circuit. When proper ground is established INDICATOR gives "go ahead" by means of light or audible signal.

**IT'S POSITIVE** — here is the ONE way to be SURE that some wiring defect, paint, rust or carelessness is not causing a faulty ground.

GILBERT & BARKER MFG. CO., West Springfield, Mass. • Toronto, Canada

## Safety Applications of Photo-Electric Cells

Protection of machine operators:  
—Guards for power presses and similar machines.

Protection of plant and personnel by detection of:

- Flame failure on oil and gas burning furnaces.
- Poisonous gases; measurement of dust contamination in atmosphere.
- Smoke or flame.

Protection of machinery against damage by:

- Switching off power should work become jammed.
- Declutching forging presses when object is below working temperature.

Alarm devices for protection of property and personnel in hazardous areas:

- Protection against high-voltage test equipment.
- Over-run on cranes.
- Height gauge for loaded vehicles.
- Burglary and trespassing.

## Cold Weather Precautions

(Factory Mutual Laboratories)

**Fire Pumps.** Keep pump houses adequately heated.

Protect suction pipe and intake from freezing.

**Extinguishers.** In unheated locations, provide non-freezing extinguishers, or heated cabinets for extinguishers which could freeze. Fill fire pails with non-freezing solutions.

**Hydrants.** See that hydrants are tight and drain properly.

Keep hydrants and indicator posts unobstructed by snow.

**Wet Sprinkler Systems.** Provide adequate heat in all sections, especially over week-ends.

Repair windows and doors which are not weather-tight.

**Dry Sprinkler Systems.** Make sure dry pipe valve enclosures are well heated.

Check air pressures daily.

Check dry-pipe alarms.

Blow out drains and low points frequently.

Check pitch of all piping for pockets where moisture could collect and freeze.

**Sprinkler Tanks.** Make sure heating systems are in good operating condition. Flush out circulating pipes and heater.

Provide heating systems for tanks not so equipped. Do not overflow tanks to prevent freezing.

## Flameproof Fabrics

In some cities and states, textile fabrics used in places of public assembly must be flameproofed. The flameproofing process also increases resistance to weather and mildew.

Textiles may be purchased already treated or customers may send their own fabrics to the mills for flameproofing.

Flameproofing materials are available in proprietary compounds or under their chemical names. Ingredients include ammonium sulphate or phosphate, ammonium chloride, borax and boric acid. They are usually applied to the fabric in saturated solution.

Detailed information, including materials, methods of tests, standards, etc., may be obtained from the following sources:

Textile Research Institute: Fireproofing of Textiles.

National Fire Protection Assn.: Recommended Requirements for Flameproofing of Textiles.

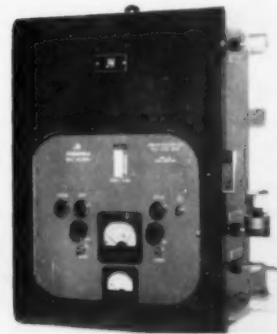
National Safety Council: Data Sheet D-220, Fire Retardant Treatment for Fabrics.

National Bureau of Standards: Circular C 455, Flameproofing of Textiles.

National Safety News, March, 1956



**J-W Model RV Alarms** sample and analyze air from 2 to 8 separate locations in sequence on a 30-sec. cycle. Recording instruments and explosion-proof construction available on special order. Applications: chemical process industries, sewage treatment plants, laboratories.



**J-W Model SM Alarm** continuously samples one location, indicates quantity of combustible gas present, alarms at a pre-set level. Typical installations: drying ovens, fuel piping systems, chemical labs.

## There's a J-W Combustible Gas Indicator and Alarm for every industrial need!

Manufactured by pioneers in the safe handling of combustible gases, the equipment pictured offers positive indication of hazards encountered under ordinary conditions in many industries. J-W equipment, the result of more than 25 years of development, assures unequalled reliability, convenience, and economy. If a problem calls for special equipment, Johnson-Williams will build it. There are no substitutes for safety or for the finest in safety devices.



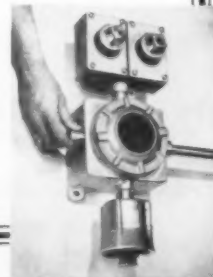
**J-W Model G Portable Indicator** for sampling in confined and inaccessible areas. Easy sample drawing; automatic battery shut-off switch; weighs slightly over 4 lbs.



**J-W Sentinel Portable Audible Alarm** maintains continuous watch for build-up in combustible gas. Ideal for hot work in confined areas: welding or repairs on tanks, piping in trenches, etc.



**J-W Model E Alarm** detects explosive gases in a single location or area. Control box mounts remote from sensing unit. Inexpensive, versatile.



**J-W Model EE Alarm** serves same purpose as Model E but is mounted in an explosion-proof housing so entire instrument may be located in hazardous area.

Write for details on any or all instruments and where to buy it.



**JOHNSON-WILLIAMS, INC.**  
PALO ALTO 2, CALIFORNIA

Over 25 years of leadership in explosion prevention

## SPONTANEOUS IGNITION

**SPONTANEOUS IGNITION** is a chemical action in which there is a slow generation of heat from oxidation of combustible material. Under certain conditions, oxidation is accelerated until the ignition temperature of the material is reached.

This condition is reached only where there is sufficient air for oxidation but not enough ventilation to carry away the heat as it is generated.

**Acute** cases occur suddenly and explosively; in **chronic** cases heat generates slowly until ignition takes place.

Examples of substances subject to ignition are dry yellow phosphorus, which ignites on exposure to air, and quicklime, sodium, potassium and calcium carbide which heat when exposed to moisture.

Some materials may be stored for long periods, processed, packed, and shipped with no signs of heating. The first warning may be the discovery of smoke. Uncertainty increases the hazard.

Before spontaneous ignition can

occur there must be combustible material, moisture, oxygen, and a certain minimum temperature. Presence of impurities in the combustible material may affect the danger of heating.

At ordinary temperatures some combustible substances oxidize slowly and under certain conditions reach their ignition point. These include vegetable and animal oils and fats, coal, charcoal, and some finely divided metals.

Rags and waste saturated with linseed oil or paint often cause fires. In such cases there is a large surface of combustible material exposed without means for generated heat to escape.

Best preventives are either total exclusion of air or good ventilation. With small quantities of material, the former method is practicable. With large quantities, such as storage piles of bituminous coal, both methods have been used effectively.

Temperatures above 140 F. are considered dangerous in coal piles. If temperatures rapidly approach or

exceed that figure, it is advisable to remove the pile or rearrange it to provide better circulation of air.

Agricultural products susceptible to spontaneous ignition include sawdust, hay, grain, jute, hemp and sisal, especially if exposed to heat or to alternate wetting and drying. Circulation of air, removal of external sources of heat, and storage in smaller quantities are desirable precautions.

Fires in iron, nickel, aluminum, magnesium and other finely divided metals are sometimes attributed to spontaneous ignition. This is believed to result from oxidation of cutting or lubricating oils, or possibly from chemical impurities.

Materials like unslaked lime and sodium chlorate promote spontaneous ignition, particularly when wet. Such materials should be stored in a cool dry place away from combustible material.

Detailed procedure for prevention and extinguishment of fires in material subject to spontaneous heating is found in National Board of Fire Underwriters publications, *Preventing and Extinguishing Fires in Soft Coal*, Bulletin No. 30, and *Spontaneous Ignition and its Prevention*, Bulletin No. 51.

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A complete "package" of sound to improve your safety program. Designed for specific use while cleaning chemical tanks. Lends itself to many applications.

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Installed on top of chemical or petroleum tanks—indoors or out. Gives a loud blast when liquid level becomes dangerous.

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**New Falcon Automatic Fire Detectors and Alarms** provide constant protection wherever fire is a hazard. Self-powered by DuPont "Freon", they give early warning at first sign of fire. U. L. Approved for 20 Ft. Spacing—Low Cost—Non Electric—Easy Maintenance—Easily Installed—30 Yr. Guarantee.

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SUMMIT, NEW JERSEY





## Construction That Resists Fire

Fire-resistant construction is essential for any industrial or commercial building. Some types of construction can survive a fire with only minor structural damage.

Building materials should be non-combustible wherever practicable, although any material may be damaged by extreme heat.

Walls and openings should be planned to prevent rapid spread of fire. Large areas should be subdivided by fire walls, with openings protected by fire doors. This will help to limit damage in a single fire.

For non-hazardous occupancies heavy plank roofs and floors are permissible. Heavy timbers are slow burning.

Wooden walls, joisted quick-burning floors and roofs, and inaccessible combustible spaces should be avoided.

Hazardous processes should be cut off by fire walls or fire-resistant partitions. Hazards that are particularly severe should be housed in separate buildings.

Explosion hazards require explosion-venting windows or other means of relieving pressures to minimize structural damage.

Important buildings with combustible roofs and floors should be separated by as much yard space as possible.

For buildings of more than one story, stairways, elevator wells, conveyors and chutes should be enclosed with fire-resistive walls. Fire doors installed at openings check spread of fire to other floors.

Blank walls, fire shutters, or wired glass windows offer protection against exposure fires. Open sprinklers are an additional safeguard.

## Fire Protection for Windowless Plants

Plants without exterior windows introduce new problems in fire fighting, many of which can be avoided by preplanning. These are more complicated in multi-story buildings with combustible floors and roofs.

Lack of access and delay in use of hose streams from outdoor hydrants may hamper extinguishment when there are no windows. Another difficulty is lack of ready means of smoke ventilation.

Automatic sprinklers will extinguish an ordinary fire in any building. But, if the fire is shielded, or if sprinklers happen to be shut off, serious consequences are likely.

Heat and smoke make it difficult to locate and attack a fire. This is further complicated when the lighting system is put out of service. If the fire reaches the stage where the building cannot be entered, and if the building has combustible floors and roof, destruction is almost certain.

Air-conditioning equipment can be arranged so that it can be used for smoke ventilation in case of fire. This is contrary to usual practice for buildings of conventional construction, where air-conditioning fans are shut down at the start of a

fire, and the area vented by opening doors and windows.

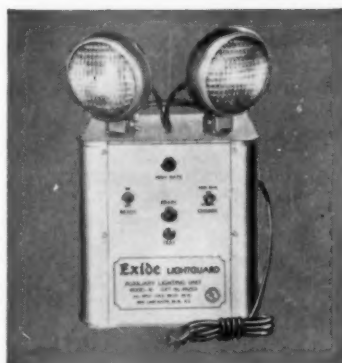
To remove smoke by the air-conditioning system, it is necessary to provide:

- Louvers in outside walls which will open at low positive pressures;
- Fire dampers in return duct systems arranged for automatic closing by thermostats or photoelectric cells in case of fire.

Additional exits for personnel and means of access for firemen and hose streams may be necessary.

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## Dependable emergency lighting



The new Model M has a 2-rate charger—high rate or trickle.

Darkness invites trouble. When lights go out, Exide Lightguards go on instantly and automatically . . . protect against injury, panic, looting and other perils that breed in the dark.

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Location of tube and construction of bottom assures 98% powder discharge.  
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POCKET GUIDE TO FIRE PROTECTION!**



**BUFFALO FIRE APPLIANCE**  
CORPORATION  
DAYTON 1, OHIO

Standpipes for 2½-in. hose in stair wells or just inside fire escape access doors, and water-flow alarms on all sprinkler risers should be provided.

Fire brigades, both company and city, should be well drilled and should know what to expect in fighting fires in windowless, air-conditioned areas. Equipment should include smoke masks and portable emergency lights.

### Safe Storage Cuts Fire Losses

Fires in storage areas are responsible for a high percentage of the total loss in fires in industrial plants. While fires do not occur as frequently as in manufacturing areas the damage per fire is often higher.

Suggestions for safe storage include:

- Keep storage out of manufacturing areas.
- Keep storage from below manufacturing processes unless the building is non-combustible and floors are water-tight.
- Storage rooms need sprinklers if either contents or building will burn.
- Store valuable materials in sprinklered building.
- Don't overlook fire protection just because shed values are small.
- Keep sources of ignition out of storehouses.
- Keep materials in low, well separated piles.

Waterproof floors with adequate drainage should be provided if lower stories contain stock or machinery susceptible to water damage. Taraulins should be kept on hand to prevent water damage.

Fire-resisting vaults should be provided for business records and valuable drawings. Civil defense measures suggest storing vital records at some point remote from industrial centers.

When construction work is in progress, good housekeeping should be practiced and temporary fire protection provided. Salamanders and welding and cutting must be watched.

Automatic detection and sprinkler systems are recommended for combustible construction or occupancy.

Combustible material should never be piled near unprotected light bulbs. Guards should be provided for these light fixtures.

# STATIC ELECTRICITY

**PARTICULARLY** dangerous in atmospheres where there may be flammable vapors, gases, and dusts is static electricity. Sparks resulting from accumulations of static electricity are a common source of fire under such conditions.

The hazard is most severe in cold, dry weather. In warm, humid weather most surfaces have a film of moisture which helps to draw off static charges.

Static charges result from friction between small particles, or from contact and separation of two unlike substances, one or both of which are nonconductive.

Flow of gasoline or other flammable liquids through hose, or dust-laden air through non-conductive passages may produce static charges.

Static electricity is generated on dry belts, particularly on rubber or leather belts by the contact and separation of belt and pulley. Excessive accumulation of static charges can be prevented by use of conductive rubber belting.

Belts can be grounded with sharp pointed metal combs or metallic tinsel static collectors which are grounded.

Where highly flammable vapors may be present, chain drive or conductive rubber belts with metal pulleys should be used rather than combs. Conductive belt dressings are helpful if renewed frequently.

**Grounding shafting.** Shafting and metal pulleys should be grounded with carbon, brass or spring brushes or contacts.

**Powdered materials.** Finely divided materials falling through the air or blown through pipes may generate static electricity and ignite explosive mixtures of dust and air. Machines should be bonded and grounded at a number of points.

**Humidity** maintained at or above 60 per cent at 70 F. helps to prevent accumulation of static charges. High humidity is obtained by special humidifiers or steam jets installed on blower type heaters.

**Ionization** of air is also used. Ionized air contains electrically charged particles which conduct static charges to grounded parts of machines. Ionization methods include gas flames, discharges of high potential electric current, and radiation from radioactive material. These methods require expert installation and maintenance and may involve fire or health hazards.

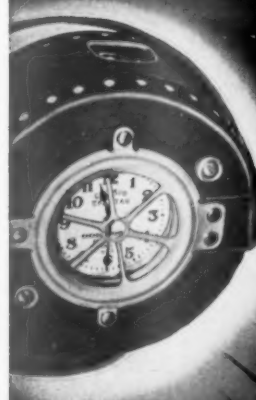
**Body static charges** may create a hazard in areas which contain highly flammable dusts, gases and vapors. Shoes with conductive soles and heels help to drain off the charges. Their conductive value is reduced by foot powders and by wool, silk or nylon socks. Cotton and rayon are safer.

**Conductive floors** should be installed in hazardous locations. Ordinary wax and other nonconductive floor finishes reduce the value of grounding measures. Special finishes for conductive floors are available.

**Automatic sprinkler protection** should be applied to the inside of bins and processing equipment containing combustible materials. Where water is undesirable because of reaction with or damage to material, inert gas extinguishers may be used.

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PROTECTION**

against  
**FIRE  
THEFT  
SABOTAGE**



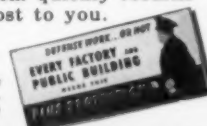
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It keeps track of your watchman's tracks—so accurately and positively that the CHICAGO WATCHCLOCK System is approved by THE UNDERWRITERS' LABORATORIES and by THE FACTORY MUTUALS LABORATORIES. Users earn reduced insurance rates. Thus the CHICAGO WATCHCLOCK System quickly returns its small cost to you.

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new folder that completely describes this simple, low-cost, tamper-proof system of extra protection to property. Write for it NOW!



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DIV. GREAT LAKES INDUSTRIES, INC.

1524 S. WABASH AVE., CHICAGO 5, ILL.

OFFICES IN PRINCIPAL CITIES

# PLANT ORGANIZATION

**IN MANY PLANTS**, fire protection is one of the responsibilities of the safety department. Even in larger plants where there is a division of duties, the safety department has an important part in the program.

Whether the plant organization for fire-fighting consists of a few trained employees with hand extinguishers or a full-time company fire department, the municipal fire department should have a prominent place in a company's fire protection plans. City firemen should be familiar with the plant layout, its fire-fighting resources, and its special hazards. They can also give helpful suggestions on training and equipping plant fire fighters.

The plant protection force should also be trained in their part in civil defense activities and in peace-time emergencies. In many cases where communities have suffered the effects of wind, flood and fire, industrial protection and medical resources have rendered notable service.

The plant should not depend on the city fire department alone. Even under favorable conditions, it takes time for outside apparatus to reach the fire, and in many emergencies the department might be busy elsewhere.

## FIRE PREVENTION CHECKLIST

### Fire Extinguishing Apparatus

- |  |   |
|--|---|
| In proper place <input type="checkbox"/> | Clearly marked <input type="checkbox"/>   |
| Unobstructed <input type="checkbox"/>    | In working order <input type="checkbox"/> |

### Housekeeping

- |   |   |
|---|---|
| Premises free of combustible materials <input type="checkbox"/> | Safe storage of flammables <input type="checkbox"/>           |
| Metal containers for oily rags <input type="checkbox"/>         | No leaks and drippings of flammables <input type="checkbox"/> |
| No accumulations of rubbish <input type="checkbox"/>            | Passageways clear of obstacles <input type="checkbox"/>       |

### Electrical Equipment

- |  |   |
|--|---|
| No bare wiring or badly worn insulation <input type="checkbox"/> | Motors and tools free of dirt and grease <input type="checkbox"/> |
| Ground connections clean and tight <input type="checkbox"/>      | No lights near combustible materials <input type="checkbox"/>     |
| Fuse and control boxes clean and closed <input type="checkbox"/> | No poor splices <input type="checkbox"/>                          |
|  | No makeshift wiring <input type="checkbox"/>                      |

### Heat and Flame

- |   |   |
|---|---|
| No Smoking areas clearly indicated <input type="checkbox"/> | Gas jets off <input type="checkbox"/>                             |
| Ashes kept in metal containers <input type="checkbox"/>     | No gas leaks <input type="checkbox"/>                             |
|   | Hot pipes clear of combustible materials <input type="checkbox"/> |

NSC Safety Instruction Card No. 237

**Fire squads.** A squad may consist of five or six men in each department. They should act as inspectors, reporting and correcting conditions which might cause fires. They should be taught the use of extinguishers, by actual demonstration of equipment on small fires, where practicable. They should also be impressed with the importance of turning in alarms promptly.

Trained men keep their heads in an emergency. They put out many fires before they do any serious damage, and also help to prevent panic.

**Fire brigades.** For the larger plant, hydrants and hose systems are basic items of protection and they need trained men to use them. Members of department squads can be members of the plant fire brigade.

These men should be familiar with all details of the plant, its protective systems and water supplies. They should be drilled frequently in handling hose streams, which is no job for an amateur. Each man should have a definite task. Some should be assigned to protecting goods and machines from water damage.

**Private fire departments.** Some large plants have full-time fire departments with motorized equipment. The department supervises the whole plant protection program and is trained in specialized techniques of fire fighting.

Any program of fire protection should be in operation around the clock.

**Watch service.** Watchmen are vital to the protection of industrial property. They discover and correct fire hazards, detect the outbreak of fire, extinguish incipient fires, and call help promptly when needed.

The watchman should be a mature, able-bodied man who is loyal and dependable. During periods when the regular working force is absent the safety of the plant may depend upon him.

The watchman should be familiar with all parts of the fire protection system, including sprinkler systems, valves, drains and fire pumps. He should know how to operate extinguishers.

Recorded hourly rounds for watchmen are recommended for



Standpipe and hose inside buildings permit fire fighters to get a stream of water on the blaze quickly.

most plants. Approved watch clock or supervisory systems give a record of calls at each station.

Many fires in manufacturing plants occur just after a plant closes down. The watchman should make his first round immediately after operations have stopped.

## Training in Fire Fighting

The following points are based on NFPA recommendations:

1. Officers and firemen should be kept fully informed on all phases of fire prevention and extinguishment. They should be encouraged to attend drill schools of the local fire department, fire colleges, etc. Books, pamphlets and magazines are available at a moderate expense. The rapid development of industry constantly brings new fire hazards and fire extinguishing methods.

2. Drills should be held twice a month or oftener, during paid time. Location of drills should be changed



A plant guard clocks in on his night rounds. Missing a station brings prompt investigation. (International Business Machines Corp.)



each time, so that men will become familiar with all conditions and parts of the plant and be able to cover any emergency that may arise.

3. Drills should include making hose connections with hydrants, unreeling and stretching hose without links, coupling and uncoupling, attaching play pipes, carrying hose up ladders, over roofs and through the interior of the building. As a general rule, water should be turned on for all outdoor practice work, except during freezing weather. (This assumes rubber-lined hose; unlined linen hose should not be wet.)

4. Drills should always be carried out under discipline and at a moderate pace and with accuracy.

5. All members of the brigade should be regularly examined as to their knowledge of the location of fire alarm boxes and the meaning of various fire alarm signals.

### Reserve Water Supply For Fire Fighting

Most people seem to consider that public water systems are infallible. The general record is excellent. They are, however, subject to a variety of accidents which may suddenly put a plant entirely on its own resources.

Damage from floods, failure of obsolete equipment, freeze-ups,

power failures, etc., have all occurred to hamper the supply of public water.

In one case, a 30-inch supply main, the sole link from the reservoir to an industrial city, broke, leaving plants without fire protection. Long single mains are particularly vulnerable.

Shortage of water due to droughts has been a recurring problem in many communities.

Growth of population and increased industrial activity are making supplies inadequate in some communities. While, in most cases,

these conditions are being remedied as fast as possible, they present a problem which may be accelerated.

Water supplies to supplement a public water supply at a plant are furnished by gravity tanks, by fire pumps taking suction from open bodies of water or from tanks, and occasionally, by private gravity reservoirs.

These supplies must be checked often to insure reliability. This includes maintaining adequate levels in tanks and reservoirs, checking pressures in mains and sprinkler systems and testing fire pumps.



Better than a megaphone. With a walkie talkie it is possible to issue instructions to plant guards and to direct fire-fighting and rescue work in an emergency.



**The  
Beacon  
Ray**  
*scores  
again!*



NOW, the FEDERAL Beacon Ray light, long a familiar sight on fire trucks, police cars and ambulances, enters a new field!

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# DON'T LAUGH!

## Your Watchman's Clock may be Old-fashioned, too

If watchman-letdown on a lonely weekend results in a disastrous plant fire—it will be no laughing matter. It's false economy to hang on to an old-style dial-type watchclock.

DETEX tape-recording GUARDSMAN keeps your Watchman alert between Friday evening and Monday morning—the most critical period for plant protection. The GUARDSMAN gives unbroken supervision on week days, weekends, holidays and extended plant closings.

The GUARDSMAN saves you overtime—does away with the need for a supervisor to return to your plant on weekends to change the clock dial. (Allowing your Watchman to change the clock dial is against insurance regulations.)

Why tempt Fate? For a modest cost you can modernize your plant's safety system with the GUARDSMAN. Send coupon today.



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☐ You may send a DETEX representative to make a free, no-obligation survey of our plant protection needs.

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# The Office Should Be Safe, Too

**EFFICIENCY**, convenience and safety require careful planning in the office as well as in the factory. The essentials of a good working environment vary only in details with the nature of the operations.

Many of the principles of work flow apply to all workplaces.

Light, ventilation, washrooms and other employee services have an important influence on employee morale.

Housekeeping has values far beyond the appearance of the office and its influence on employees and visitors. It contributes to health and to the elimination of slipping and tripping hazards.

The following basic details should be considered:

## 1. Layout

Work should flow through the office with a minimum of backtracking.

Transportation distance of work should be at a minimum. Where possible, desks should be arranged so that each worker will receive his work from the person behind or beside him.

Files should be placed against walls or railings.

Desks should face in the same direction for most office operations. Where two employees are working together, they may face each other.

Employees using the same machine should be grouped.

Heavy equipment should be placed against walls or columns.

Employees should be placed in front of or around the person having supervision over them.

Those having frequent callers should be near entrances.

## 2. Space

Growth of a business sometimes results in installing more desks and other equipment than original plans called for. Overcrowding is bad from the standpoint of both appearance and the psychological effect on employees and it may also overtax existing ventilation facilities.

A suggested minimum width for aisles is 4 feet. For desks facing in the same direction, distance between the back of one desk and the front of another should be not less than 3 feet. More space per employee is, of course, highly desirable.

## 3. Light

Fluorescent lighting fixtures, with

their high efficiency and low current consumption, are making the office increasingly independent of daylight and permitting more efficient use of available space.

If the office depends largely on daylight, employees engaged in the most exacting visual tasks should be located nearest the windows. North light is preferred by draftsmen and artists.

Employees should not face windows, unshielding lamps or other sources of glare. Wall and other surfaces should conserve light while avoiding annoying reflection.

## 4. Ventilation

In many offices the defects of window ventilation are quite obvious. Persons by the windows may get too cold and those farther away may be too warm. Where there is much interior space forced ventilation may be needed. Such installations should be planned and installed by experts. More and more offices are being air-conditioned but many will have to get by with natural ventilation for some time to come.

## 5. Noise

Sound-absorbing materials are being used increasingly for ceilings, even where normal noise is not considered excessive. Noisy machines should be segregated.

## WATCHMEN

Keep flashlight or lantern in good condition.

Use stairs, ladders and elevators carefully.

Know how to reach hospital, doctor, fire and police in a hurry.

Be able to give yourself first aid.

Avoid tripping hazards, holes and nails in floors.



## Watch the plant for:

1. Bad housekeeping, particularly oily rags and flammable stuff.
2. Materials piled near sprinkler heads and fire equipment. Fire doors blocked or left open.
3. Signs of smoking in dangerous places.
4. Leaks of flammable liquids or gases.
5. Open flames, gas or electric heaters operating improperly or out of order.
6. Fire fighting equipment out of place or out of order.

NSC Safety Instruction Card No. 35

## 6. Electricity

Dictating machines, adding machines, electric typewriters, desk lamps and other equipment require outlets and extension cords. These should be arranged to avoid tripping hazards.

## 7. Floor Maintenance

Defective tiles or boards should be repaired immediately. Floor finishes should be selected for anti-slip qualities. Special care is needed on stairways and at elevator entrances.

## 8. Glass Doors

These should be painted with some conspicuous design near eye level to prevent persons walking into them.

## Preventing Welding And Cutting Fires

All operations should be restricted to a specified area and before portable units may be moved, written consent of a qualified official must be secured. The location must be carefully examined before signing permit.

No cutting or welding while sprinklers are out of service.

Equipment must not be used in presence of flammable vapors and liquids or tanks which have contained such materials.

Floors and surroundings must be swept clean and wet down. All combustibles should be relocated 30-40 feet away. Cover remainder with asbestos curtains, metal guards or flame-proofed covers (not ordinary tarpaulins).

Extra men should be provided to watch sparks. Ample fire protection equipment, such as hand hose, extinguishers, water pails, etc., should be provided.

When operations are in combustible buildings, a man should be stationed on the floor below and possibly on the floor above. The areas including the floors above and below the one on which the opera-



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tion is performed should be patrolled for at least a half hour after the work is completed.

If near the shutdown period, the remaining employees or watchman should also be notified.

Keep the cutting and welding equipment in good repair at all times; soapy water should be used in testing for leaks.

### 1,500 Deaths Due to Catastrophes Last Year

Catastrophes—identified as accidents in which five or more per-

sons were killed—were responsible for about 1,500 deaths in the United States during 1955, it is estimated by the Metropolitan Life Insurance Company's statisticians.

The total is about 300 higher than that for 1954. This increase reflects a rise in the number of major catastrophes; during 1955 there were nine such, each of which took 25 or more lives, but only four in 1954.

Natural disasters accounted for five of last year's major catastrophes. The most costly in loss of life was

hurricane "Diane" and the flash floods which followed it in the northeastern states on August 17-19, leaving a death toll of about 180, mainly in Pennsylvania and Connecticut.

Other major natural disasters were the May 25 tornadoes in Kansas, Oklahoma, Texas, and Missouri, which took 115 lives, including 80 in the Udall, Kans., area; the year-end floods inundating areas in California and Oregon, in which the death toll is estimated at 84; the mid-October floods in the northeastern states, which killed 48; and hurricane "Connie" of August 12-14, in which 25 lives were lost.

There were four other disasters in 1955 which claimed more than 25 lives. They were a fire in a men's hotel in Chicago in which 29 persons were killed, and three plane crashes in which a total of 124 lives were lost.

### Shift Site of 1956 Atomic Trade Fair

The Atomic Industrial Forum has announced that heavy demand for space in the second annual Trade Fair of the Atomic Industry has caused the site of the Fair to be shifted from the Morrison Hotel in Chicago to the Navy Pier, Chicago. The Fair will run during the period September 24 through 28, concurrent with a major Forum meeting on "management and technology for the atomic industry," September 25, 26 and 27. As announced by the Forum on September 9, 1955, the Morrison Hotel will remain as conference headquarters and primary meeting location.

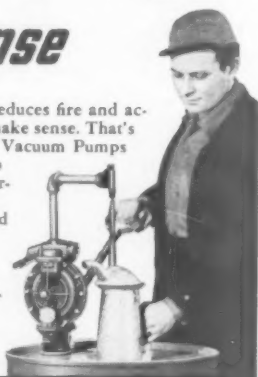
The first U. S. Trade Fair of the Atomic Industry was held last September in Washington, D. C. Industrial and government exhibitors displayed a wide range of atomic products and services to more than 7500 observers who came from 44 U. S. states and territories and 41 foreign countries.

Emphasis in the Fair Trade is on those products and services directly related to the application of atomic energy, either through power generation, heat utilization, or wide use of radiation in manufacturing processes, research, agriculture, medicine and food sterilization. The Fair is wholly-managed by the Forum with the guidance of an 18-man Exhibit Committee, representing a broad cross-section of interests from the atomic industry.

## Pumping makes sense

Any plant improvement that reduces fire and accident hazards certainly does make sense. That's the case when Tokheim High Vacuum Pumps are put into service. They help prevent spilling, slopping, overfilling and dripping. Operate on both forward and backward strokes—deliver 20 gallons per 100 strokes. Available with hose or spout outlets and other optional attachments.

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## What's the Time Charge On That Injury?

**TIME CHARGES** used in reporting accident experience to the National Safety Council for contest and record purposes are listed in the following table. This table conforms to the definitions specified in *American Standard Method of Compiling Industrial Injuries Z 16.1*:

### Fatality—6,000 days

#### Arm

- Any point above\* elbow, including shoulder joint—4,500 days.
- Any point above wrist and at or below elbow—3,600 days.

#### Hand

- At or below wrist and above proximal joints or fingers — 3,000 days.

#### Thumb

- At or below (toward tip) proximal joint, and above distal joint—600 days.
- At or below distal joint—300 days.

#### Leg

- Any point above\* knee — 4,500 days.
- Any point above ankle and at or below knee—3,000 days.

#### Foot

- At ankle and above\* proximal joint of toes—2,400 days.

#### Great Toe

- Above distal joint up to and including proximal joint—300 days.
- At or below distal joint—150 days.
- Two great toes—600 days.
- Each toe other than great toe: complete—150 days.
- less than complete—75 days.

#### One Eye

- Loss of sight—1,800 days.

#### One Ear

- Loss of hearing—600 days.

#### Both Ears

- Loss of hearing—3,000 days.

#### More Than One Finger of Same Hand

- Two fingers—750 days.
- Three fingers—1,200 days.
- Four fingers—1,800 days.
- Thumb and one finger—1,200 days.
- Thumb and two fingers—1,500 days.
- Thumb and three fingers—2,000 days.
- Thumb and four fingers—2,400 days.

\*The term "above" when applied to arm, hand or fingers means "toward shoulder;" when applied to leg, foot or toes means "toward hip."

### Finger, Except Thumb

- At or above middle joint, up to and including proximal joint—300 days.
- At or above distal joint, up to and not including middle joint—150 days.
- Below distal joint, provided bone is damaged—75 days.
- Tip, without either traumatic or surgical bone involvement—Actual days of disability if any.

### Permanent Total Disability

3.3.2. The loss of, or the complete loss of use of, any of the following in one accident shall be considered permanent total disability:

- (a) Both eyes;
- (b) One eye and one hand, or arm, or leg, or foot;
- (c) Any two of the following not on the same limb: Hand, arm, foot, or leg.

### Temporary Total Disability

3.4.1. An injury which does not result in death or permanent impairment shall be classified as a temporary total disability if the injured person, because of his injury, is unable to perform a regularly established job, which is open and avail-

able to him, during the entire time interval corresponding to the hours of his regular shift on any one or more days (including Sundays, days off, or plant shutdowns) subsequent to the date of injury.

### Temporary Partial Disability

3.4.2. A regularly established job is one which has not been established especially to accommodate the injured employee, either for therapeutic reasons or to avoid counting the case as a temporary total disability. If the injured person is returned to a regular established job other than his own, the injury shall be classified as a temporary partial disability. See 3.5, Page 7. Z-16.1 Bulletin.

## Bosses Blamed for Employees' Breakdowns

Tyrannical bosses were revealed as an important cause of emotional illness in a survey of cases of supposed "overwork" reported recently to the American Medical Association.

New supervisors who constantly demand more production and never give praise were labeled as the cause of breakdowns in a large proportion

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of the 91 cases studied, according to Dr. Jackson A. Smith, professor of neurology and psychiatry at the University of Nebraska school of medicine.

He said that work itself apparently caused only seven of the cases, while unwise supervision, observation of a severe illness in another employee, an already existing state of tension, or physical injuries were precipitating factors among the other 84 patients.

Disagreement with immediate supervisors caused 49 patients to become emotionally ill. The trouble usually began with the hiring of a new supervisor who believed the most efficient way to obtain production was to constantly demand and never praise.

"Except for the wording," Dr. Smith reported, "the complaints were the same, whether the patient was one of the lesser vice-presidents of a national concern, a secretary of a large office, or a section hand doing manual labor for a railroad."

At first, the patients reported physical complaints, he said. But after repeated physical examinations and laboratory tests which showed nothing, psychiatric aid was sought.

It then became apparent that the patients were apprehensive, fearful,

and constantly concerned about their mental status and physical complaints, Dr. Smith said. He added:

"The loss of efficiency, morale and interest in the work which resulted from the conflict with the supervisor could not be measured but would seem an area of economical concern to the employer when measured over a period of years or months.

"In one department such supervision led to the transfer or resignation of half the technical personnel over a five year period before the disturbing departmental manager was relieved."

## Salt Is Needed in Most Diets

So-called "salt free," or "salt poor" diets may be dangerous, the Illinois Medical Society reports. Disturbing the salt balance of the body may be dangerous to many persons.

The only persons who might be benefited by reduction of normal salt intake are persons with serious heart or kidney ailments. These should be under medical care.

The danger is especially serious in hot weather. Loss of salt through excessive sweating in summer heat can cause a severe reaction. This might even be fatal in a person whose salt reserve is already depleted by an unsupervised diet.

Sodium and chlorine are essential to normal body function. Every body cell requires sodium in some way. A proper balance among sodium, potassium, and calcium is essential to normal heart action.

Chlorine is also required for health; an adequate supply permits the body to manufacture hydrochloric acid, a component of gastric juice which is necessary to digestion.

Americans get much of their daily requirements from their meals, part of which is taken in the form of extra table salt.

Moreover, in areas such as the Great Lakes basin, the soil is deficient in iodine, which is essential to the functioning of the thyroid gland. Iodine is usually added to table salt sold in such regions to prevent the type of goiter due to lack of iodine.

When table salt is removed from the diet of the resident of this area, therefore, he may be deprived of three elements essential to life—sodium, chlorine and iodine.

Occasionally a physician will take the risk to relieve the symptoms of certain patients suffering from heart or kidney disease. This is a calculated risk. The patient must be watched constantly to see that his salt reserve does not drop below

the minimum essential to health.

The physician must be ready to increase the sodium intake immediately in case of sudden additional loss of salt, such as that due to prolonged heat and excessive sweating.

Perspiration contains sodium chloride and its loss through sweating can be severe. That may occur even in normal persons exposed to extreme heat, with weakness, nausea, cramps, collapse, coma, and even death, unless the sodium deficiency is quickly corrected.

A salt-free diet as a means of losing weight is largely futile since little or no fatty tissue is lost, the society points out.

## Voice of the Reader

Let's have your views on current topics. You don't have to agree with us

### Electronic Guards

GRAND RAPIDS, MICH. The January issue carries an article, "The New Approach to Machine Guarding," in which the use of photo-electric relays for guarding is described.

It may be of interest to know that a user of electronic guards has found that the ordinary electric eye is not generally suitable for guarding purposes. If you use the ordinary electric eye, you depend on it always functioning.

Ordinary equipment, however, is not designed so that any failure will stop the machine and prevent injury. This is true not only for failures within the electronic equipment itself but also for external conditions, such as strong outside light. Should such outside light fall on the receiver lens, the equipment will no longer be sensitive to the beam from the light source—the beam which is performing the guarding function.

It is obvious that the equipment just mentioned is not what safety engineers call "fail safe." In our plant we have had occasion to use electronic guarding, and we found one type of equipment specifically designed for guarding purposes. This equipment uses light but it has a circuit which depends on a certain amount of light reaching the receiver. Should an external source of

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light shine on the receiver lens, then it will stop the machine, just as though insufficient light were reaching the lens.

The equipment is also designed so that any failure within the circuit will stop the machine. In our years of experience we have found it a reliable safety tool.

I believe it is important to the reader to point out that there are limitations in the use of ordinary electric eyes, and they should not be recommended generally for safety purposes. There are types designed specifically for safety purposes.

HENRY T. LATHROP  
Vice-President,  
Bissell Carpet Sweeper Co.

### Safe in Church?

HARTFORD, CONN. The article, "Safe in Church?" in the February issue, is extremely interesting.

I am greatly disturbed because it brings flash conditions to my mind of those in the church of which I am a member and other churches I can easily think of. I wonder if you can help by sending a copy of your article and tell me how I can obtain a

copy of the magazine for ministers to which you refer.

C. T. VAN VLIET  
Hartford Accident and  
Indemnity Co.

CHILLICOTHE, OHIO. I read your article, "Safe in Church?" in the February issue.

I have thought of this article many times but haven't done too much about it. However, we are now in a building program and I believe it would be a good time to correct such situations.

Will you please let me know where I can secure a copy of "Your Church May Be Dangerous," or will you be reprinting it in the NEWS? I believe it would be an appropriate service.

F. H. WAGNER  
Director of Safety  
The Mead Corp.

—The article referred to appeared in *The Pastor*, published by the Methodist Publishing House, 810 Broadway, Nashville, Tenn., 20 cents a copy. Dr. Jackson has written an article on the same subject which will appear in the April NATIONAL SAFETY NEWS.—Ed.

## PERSONALS

News of people in safety  
and related activities

### Joins NSC Staff

DR. HARRY P. HARTKEMEIER has joined the staff of the National Safety Council to conduct research into the relationship between traffic inventory activities and the incidence of motor vehicle accidents.

Dr. Hartkemeier comes to the Council from the University of Missouri, where he has been professor of statistics and director of the Statistics Laboratory. He received his Ph.D. degree from the University of Chicago in 1930.

Dr. Hartkemeier is the author of more than 50 publications in the field of statistics, including several college textbooks. In 1953 he received a Fulbright award from the U. S. Department of State which provided for extensive travelling in Europe as well as a lecturing assignment on statistics in the College of Com-

### AT LAST

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The Model XP-100 explosion-proof portable is a completely new light designed to meet the needs of the various petroleum, chemical and marine industries for a lighter weight and smaller portable light that will be easier for workmen to use in hazardous locations where volatile air mixtures are present. The TUFFITE handle and globe holder are of a new design with a shorter handle which is slightly tapered and larger in diameter to give it additional strength. The aluminum guard and globe holder are of a high impact aluminum alloy and the hook is non-sparking and can be furnished either rigid or swivel type. The guard can be furnished with 180° eye-shade (upon request) and the guard and hook can be insulated to further increase its

#### Check These Features . . .

- Lightweight, sturdy cast aluminum construction
- Anodized to withstand rust
- Heavy duty TUFFITE handle and holder
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or wherever an explosion-proof portable light is needed.

impact strength when dropped, and also protect the operator from the possibility of skin burns. It likewise will protect the interiors of airplanes.

The dimensions of the XP-100-X, 100-watt capacity portable light are as follows:

Overall length, including cord bushing and hook ..... 17 1/4"  
Outside diameter ..... Under 5"  
Total weight ..... Approx. 4 lbs.

This design is also available in a 50-watt size, our Model XP-50-X, which utilizes the same TUFFITE globe holder and handle assembly as the Model XP-100-X and takes an A-19 50-watt 50A/RS bulb.

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merce and Economics in Baghdad, Iraq.

A biographical sketch on Dr. Hartkemeier appears in current volumes of *Who's Who in America*, *Directory of American Scholars*, and *Who's Who in Commerce and Industry*.

The research study is expected to reveal information on the influence that different traffic activities have on accident occurrence—which activities are most effective, which least, or which combination of activities is most effective. The findings of the research study might well form the basis for a review of the relative values assigned to various programs in the inventory of traffic safety activities.

### Fire Prevention Week Program Winners

Philadelphia, Pa., and Kentville, Nova Scotia, won the Grand Awards in the United States and Canada respectively for the best 1955 municipal Fire Prevention Week programs submitted in the International Fire Prevention Week Contest. The contest is sponsored by the National Fire Protection Association, Boston.

In addition to the municipal Grand Award winners, there were the following Grand Awards in the contest's Industrial and Military Divisions: Chance Vought Aircraft, Inc., Dallas, Tex. (Industry); Anniston Ordnance Depot, Ala. (U. S. Army); Naval Station Seattle, Wash. (U. S. Navy); Carswell Air Force Base, Tex. (U. S. Air Force); HMC Dockyard, Halifax, N. S., (Department of National Defence, Canada.)

In contrast to the Municipal Division, entrants in the Industrial and Military Divisions competed on the basis of year-around fire prevention activities.

A total of 1509 entries were received in the 1955 contest: 963 in the Municipal Division; 444 in the Military Division; and 102 in the Industrial Division.

In addition to Canadian participation in the contest, entries were received from Alaska and both United States and Canadian overseas military installations.

### Smoke Can Be As Deadly As Flame

Some 74 per cent of all dwelling fire victims die upstairs from downstairs fires—asphyxiated by toxic gases, according to National Fire Protection Association. In public places too, and even among firemen, smoke, hot gases and toxic fumes take a terrible toll. Here are a few thoughts to remember:

The worst concentrations of carbon monoxide are usually found in the first stages of a fire, especially in a slow starter. (Two breaths of air containing 2 per cent CO can kill in three minutes.)

A smoky fire in a confined place is best left alone—close the door on it and call the fire department.


The danger of smoke cannot be judged by color or density. Thin smoke may be very toxic.

Air near the floor may be coolest but it may also contain poison gases (such as hydrogen sulfide) which are

heavier than air, depending on what is burning.

When escaping through smoke it is better for a person to breathe deeply two or three times rather than to just gulp a single breath and run. Deep breaths can be held much longer. Also CO, even in small amounts affects a person's reasoning. Anyone who has been through a fire, therefore, should be watched carefully so that no foolish action will be taken. Persons having escaped from a burning building have been known to run right back in.

## Good housekeeping is good business



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## Protection Against Wind

Damage from windstorms may occur in any section of the country and the menace is not limited to any season. Tornadoes, cyclones and hurricanes are more frequent in the milder months while destructive blizzards cause heavy damage in the northern sections during winter.

Roof coverings, copings and flashings are especially vulnerable to wind damage. In addition, outside structures such as stacks, ventilators, canopies, signs and cranes should be designed and anchored to resist wind, and good maintenance should be provided.

Wood and steel-deck roofs need special anchorage to resist lifting by strong winds. Standard roof anchorage is designed to resist gust velocities of 90 mph. In most cases this will protect against minor tornadic storms and reduce the extent of damage outside the vortex of a severe tornado.

The vortex of a tornado rarely strikes a plant but there are many storms severe enough to tear off outside structures and plank-on-timber of joisted roofs that are not anchored on. Such forces are encountered in severe gales and thunder squalls as well as in minor tornadoes and on the edges of a major tornado.

## Fire and Gas Deaths Highest in Winter

Accidental loss of life from fires and burns by other means is nearly three times as high and that from poisonous gas five times as high in the winter as in summer, according to a study by statisticians of the Metropolitan Life Insurance Company.

Both classes of fatalities are associated largely with the increased use of heating facilities.

Many poisonous gas fatalities, the statisticians report, result from improperly installed or defective heaters. An appreciable number are due to running an automobile motor in a closed garage or in a parked car.

Fatal falls also are at a maximum in winter, although the rise is relatively moderate. The death toll for February, the peak month, is only about eight per cent higher than the annual average.

## Metal Fires Need Special Extinguishers

Ordinary extinguishers are not effective for fires in magnesium, powdered aluminum, zinc, sodium, or potassium. For such fires an ex-

tinguishing powder known as G-1 has been developed. This is available in 40-pound pails and 325-pound drums. It is usually applied in a layer at least 1½ inches deep.

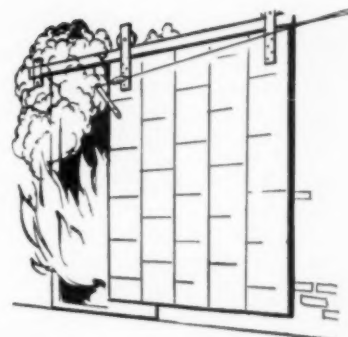
Where large amounts are needed, a wheeled applicator holding 600 pounds of powder can be used. The powder is discharged by an electric impeller through a hose and nozzle.

## Plan Standards for Atomic Energy in Industry

Seventeen industries making use of atomic energy, together with public safety groups and government agencies began work February 15 on national standards for the commercial and industrial use of fissionable material.

The group of 36 individuals, making up a Planning Committee for Standards in the Field of Nuclear Energy, met in New York City and furthered discussions begun in December to establish standards according to procedures of the American Standards Association.

The Planning Committee, under the chairmanship of Morehead Paterson, president and chairman of the board, American Machine and Foundry Company, appointed com-



Fire doors with fusible links that melt at relatively low temperature help prevent the spread of fire through a building.

mittees to plan work in six major areas: general or administrative standards such as those for terminology, symbols and color codes; radiation protection of people and property; standards for nuclear safety, such as site location, laboratory experimentation and transportation or storage; standards for equipment; for processes and for materials.

The planning committee on standards for materials will be set up by the American Society for Testing Materials. John R. Townsend, di-



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Sudden blackouts breed confusion, panic, property damage, bodily injury — even loss of life. You can have completely dependable protection against sudden blackouts by installing Big Beam automatic emergency lights. (Plug into any convenient lighting outlet.) Then whenever regular lights fail, your Big Beam will provide hours of bright, safe illumination.



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rector of materials and engineering, Sandia Corporation, Albuquerque, New Mexico, and former chairman of the Standards Council of the American Standards Association will head this committee.

### Electrical Fires Cause Heavy Losses

Out of 3,179 industrial fires reported to Associated Factory Mutual Fire Insurance Companies during 1954, 745 (23.4 per cent) were classified electrical. They occurred because electrical equipment was improperly installed, poorly maintained, or worn out. Also because electrical devices and fittings were types unsafe for areas with flammable vapors and dusts.

In addition, 59 fires (1.9 per cent of total) were caused by sparks from static electricity (due to the absence of adequate grounding, static elimination, humidification), which ignited the dusts and vapors.

### Test Resistance on Lightning Arresters

Ground resistance for lightning arresters, including rods on stacks should not exceed five ohms. When resistance is too high, a lightning surge will not dissipate properly to

earth. Lightning arresters are necessary for protection of power systems during violent electrical storms and ground tests should be made at least once a year, preferably just prior to the anticipated thunderstorm season.

The essential difference between ground testers and insulation testers is that the ground testers use low voltage a-c instead of high voltage d-c and the readings are in ohms instead of megohms.

### Incendiary Fires

Fires of incendiary origin may be the work of enemy agents, disgruntled individuals or trespassers who try to cover up theft or are merely careless with fire.

A general tightening up of plant protection measures and careful identification of employees are sometimes needed. In some cases, restricted areas may be desirable.

If evidence points to subversive activities, the regional office of the Federal Bureau of Investigation should be notified.

Flammable liquid should not be emptied into drains or sewers. A serious explosion could occur if the vapors were ignited.

## How Does Your Fire Protection Rate?

### FIRE DOORS

Are self-closing devices in good working order?

Do the fire doors close easily and automatically?

Are fire doors kept clear of storage and other obstructions?

Are fire doors and metal coverings in good condition?

### ELECTRICAL EQUIPMENT

Are fuses of correct size applied to all circuits?

Has all temporary wiring been eliminated?

Are light bulbs kept clear of combustible materials?

Are oil switches and circuit breakers in good working condition?

Has dielectric in transformers and switches been checked?

Are electrical grounds and lightning protection satisfactory?

### FIRE APPLIANCES

Is every fire extinguisher properly charged and tagged?

Are extinguishers located where they can be reached quickly?

Has defective or missing equipment been replaced?

Do outside hydrants drain so as to prevent freezing in winter?

Is all fire hose capable of standing necessary pressures?

If you have a truck, is it ready for immediate use?

### CLEAN UP

Is all dipping equipment cleaned regularly?

Are trash and flammable materials quickly and safely disposed of?

Are metal trash receptacles used exclusively?

Is excelsior and similar material kept in fire resistant containers?

### AUXILIARY FIREMEN

Are your auxiliary firemen well trained, and do they drill often?

Does your fire department maintain a system of regular fire inspections?

Is responsibility for fire protection properly delegated?

Are the firemen equipped with all necessary supplies?

Do the firemen keep up with the best fire-fighting methods?

Is the public fire department familiar with your plant?



## THE INVINCIBLE LOG PILE NOZZLE

**1100 Gallons  
Per Minute**

This particular type of nozzle is especially designed for the protection of log piles of the paper interests, and other large insurance risks. Approved by the Associated Factory Mutual Fire Insurance. Inlet tapped 3 1/2", female Iron Pipe thread or 4" male Iron Pipe thread.





## DELUGE ROOF, TOWER, LOCK GEAR & FIREBOAT INVINCIBLE NOZZLES

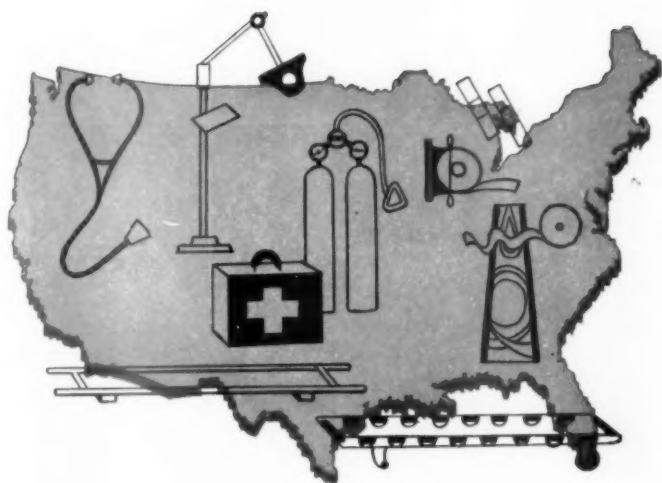
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**F. N. McINTIRE  
BRASS WORKS INC.**

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Fig. 170. New York Type Shut-Off Nozzle. Fig. 170A furnished without Swivel Underwriter Handle.  
Fig. 164AN. 4 1/2" Swivel Female by two 2 1/2" Ball Type Gated Siamese, 1/2 turn, for use on Hydrants, Trucks, etc. Also furnished with swivel females instead of males.

# MEDICAL and HEALTH SERVICE



## IN THIS SECTION

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Resuscitation Methods and  
Equipment ..... 288

**P**REVENTION, no less than cure, is an objective of industrial medicine. The physician, the nurse, and the layman trained in first aid are on the same team as the industrial hygienist and the safety engineer.

Keeping minor injuries from developing into major disabilities is still an important function of medical service. But it is no longer merely a supplementary defense against injuries.

Medicine's development along the preventive side has been of far-reaching importance both to industrial development and to public health. Placement through physical examinations, general health supervision of employees, and studies of health hazards have all been invaluable to industry.

And in times of emergency, in peace or in war, industrial medical staffs will continue to serve their communities.

# now **SAFE** first aid kits with **ROUND** safety corners

Another  "first"

Round corners are safe corners! That's why MScO now brings you unit first aid kits with *new smooth contours throughout*. No sharp edges or ends . . . nothing to cut, dig, or scratch. This *exclusive* MScO design is especially advantageous when a kit is carried on mobile equipment. In case of accident there are no sharp parts to cut, whether a person is thrown against the kit or is struck by it as it flies through the air because of impact. And this kit is far safer when being carried by a "first aider," too. This MScO advance is just one of the many that have been introduced over recent years—to give you and your personnel the *very best* in unit first aid. Ask your distributor for complete details.

**plus cellophane-wrapped  
units in matching color**



Cellophane wrapping by MScO eliminates replacement of infrequently used units . . . makes units tamperproof, guards against pilferage . . . cuts inspection time 75% . . . gives continuous protection to every unit . . . builds extra confidence among your personnel. Units color matched to the new round-cornered kits—highly visible, extra legible buckskin tan with forest bronze. Ask your distributor for details.

 *Specialists in  
first aid*

## Medical Supply Company

ROCKFORD, ILLINOIS • IN CANADA, IT'S SAFETY SUPPLY CO.



# MEDICAL AND HEALTH SERVICE

**INDUSTRIAL MEDICAL** and health service provides a program of positive health maintenance for employees. This is accomplished through measures to provide:

- A safe and healthful working environment
- Medical services for emergency treatment of the ill or injured
- Supervision of the health status of the individual through examination, counseling and placement
- Health education
- Observance of laws, regulations and codes for the protection of health.

New processes and new materials, with actual or potential health hazards, have brought additional problems and opportunities to the medical department. To study and control occupational health hazards, some large corporations maintain industrial hygiene laboratories.

Smaller companies obtain help from insurance companies, state departments, laboratories maintained by universities and research organizations, and private consultants.

## SCOPE OF MEDICAL PROGRAM

Industrial medical service requires a definitely organized plan. It must have management's full support but the program should be set up and operated by a physician who should be given considerable latitude in carrying out his methods and policies.

Essentials of the program are:

- A staff of qualified physicians, nurses and attendants adequate for the organization.
- Dispensary and hospital facilities conforming to standards established by the American Medical Association, American College of Surgeons and the American Association of Industrial Physicians and Surgeons.
- Efficient care of occupational injuries and diseases.
- Reasonable first-aid treatment for non-occupational injuries and illnesses while on the job.
- Physical examinations—pre-employment and periodic.
- Adequate records of treatments and individual medical histories. The latter should be kept confidential.

—Supervision of plant sanitation and hygiene measures.

—Instruction of employees in personal health and safety.

Industrial medicine recognizes the place of the private practitioner in providing medical care for the employee and his family and does not enter into competition where community medical resources are adequate.

**Hospitals.** Use of approved public hospitals, where available, is usually more desirable than setting up elaborate facilities for surgery and treatment of serious cases.

**The medical director.** Health and medical services should be under the supervision of a physician. Management and the medical director can formulate workable policies.

Medical assistants, consultants, nurses, and others should be selected on the recommendations of the medical director.

Full-time service of a physician may be warranted by the size of the plant or the nature of its operations. Sometimes a plant physician engages in private practice with the com-

pany's approval. He may devote part of his time to the industrial organization, assuming supervisory responsibility and delegating detail work to qualified assistants.

**The nurse.** The health program may require the services of many other professional people, including the nurse, the industrial hygienist, the safety engineer, the sanitary engineer, and other specially trained persons.

Most of the industrial nurses are employed by companies which have single-nurse dispensaries and a physician on a part-time or on-call basis. She is assistant to the physician and his representative when he is not at the plant. She is also friend and confidant of the employees.

Where the nurse is the only full-time person in the dispensary, her duties include:

- Maintain supplies and equipment.
- Provide first-aid care for injuries and emergency treatment of illnesses as authorized by the physician in charge.
- Assist the physician with medical examinations.
- Participate in the health and safety program.



Clinical laboratory facilities in medical department of Inland Steel Company, Indiana Harbor, Ind. Here all applicants for employment undergo complete examination. Porcelain steel walls and terrazzo floors are easy to keep clean and sanitary. Acoustical ceilings and shielded fluorescent lights are other features.

- Promote health education and counsel employees on personal health problems.
- Take part in welfare activities.
- Keep adequate dispensary records. The nurse should not be so burdened with paper work as to interfere with her professional duties.
- Be familiar with the plant and its hazards through plant tours.

**Cooperative services.** Where several small plants are close together, a cooperative medical service program can often be carried on. A central dispensary with the necessary personnel and equipment is maintained. Adequate service can be made available at moderate cost.

## PHYSICAL EXAMINATIONS

Pre-employment examinations have become standard procedure in many companies. Their purpose is to place each employee in a job suited to his capacity rather than to bar anyone from a job.

Periodic checkups are desirable, particularly for elderly employees, for those in jobs where safety depends on physical fitness, and where there is exposure to health-hazardous materials.

Examinations include vision, heart, chest, blood pressure, hearing, and urinalysis. Tests in some industries require rather elaborate laboratory facilities and highly trained personnel.

**Laboratories.** For most industries, facilities for taking urine tests and blood counts are needed. Blood serum samples can be sent to a local or state laboratory for analysis. Where a large volume of toxicological tests is conducted, a complete laboratory at the plant may be desirable.

**Vision.** Several devices for test-



Chest x-rays reveal many conditions in the curable stage. (United Fruit Co.)

ing visual acuity and classifying workers for jobs are available. These devices can be used by trained laymen. Employees showing visual defects are referred to ophthalmologists or optometrists for further tests.

**Hearing.** By means of the audiometer, acuteness of hearing can be determined and treatment indicated. Any progressive loss of hearing, through noisy work or other causes can be measured.

**Chest.** For many occupations, pre-employment and periodic examinations include x-rays of the chest. Mass chest surveys are made at regular intervals in industries where health hazards require frequent checks, and in public health campaigns to detect incipient cases of tuberculosis and cancer.

Trained technicians with mobile equipment can be engaged to conduct mass x-ray surveys.

## CONSULTANTS

The medical director, like the private practitioner, is not an expert in all branches of medical sciences. Both find it necessary at times to call on specialists when diagnosis is uncertain or treatment requires specialized techniques.

**Surgeons.** In all surgical cases where there is danger of inaccurate diagnosis or inadequate treatment, outside consultation should be called in early. Frequently, the administrative and diagnostic ability of the medical director is more important than his skill in surgery. The plant physician should refer all cases which might be beyond his training and experience to a specialist or surgeon.

**Oculist.** Injuries to the eyes are among the most frequent of occupational injuries. The importance of the eyesight justifies obtaining the highest available skill. Specialists should be summoned in all potentially serious cases.

Ophthalmologists and optometrists can also serve industry in correcting defective vision among employees. The employee should, of course, have the privilege of choosing his own refractonist but frequently he will ask the advice of the medical department on the selection of a specialist.

Where prescription goggles are indicated, some companies provide the examination.

—To page 290

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# Care of the Injured

**PREPAREDNESS** for accidents and sudden illness is essential wherever people work. It must include first-aid facilities that meet at least minimum standards and trained personnel who know what to do—and what not to do—when their services are needed.

Prompt and skilled treatment has prevented many minor injuries from becoming serious, thereby avoiding much lost time. Sudden attacks of illness may also occur on the job, and a layman who can administer first-aid treatment and get the patient in the hands of a physician often can prevent serious consequences.

A physician or nurse should treat injuries wherever possible. Companies which have trained large numbers of employees in first-aid do not permit them to treat injured persons if medical service is available. Their training is strictly for emergencies.

However, most injury cases in the plant and outside, are first handled by laymen and the minutes before the doctor arrives may be vital. Many a life has been saved because some person immediately stepped in to check bleeding, apply artificial respiration, and treat shock.

Many laymen acquired skill in first-aid during military service, and experience in combat showed the value of their training. Many civilians have been trained by the American Red Cross and the U. S. Bureau

of Mines in the United States and by similar organizations in other countries.

Adequate care of the injured requires:

1. Trained attendants
2. Clean, convenient quarters
3. Equipment and supplies that meet medical standards
4. Well-planned organization and procedure
5. Well-kept records

This discussion is concerned primarily with the needs of plants which must depend on trained laymen, or at most a full-time nurse and part-time physician rather than those with medical staffs and hospital facilities.

**The Staff.** First-aid facilities should be under the supervision of at least a part-time physician. A full-time registered nurse is desirable, even in a medium-sized plant.

If a full-time nurse is not practicable, at least two employees who have completed standard first-aid courses should be selected to carry on the work. They should be under the supervision of a doctor or a nurse.

Attendants should be allowed sufficient time from their jobs to keep the first-aid room in order, check supplies, and keep the necessary records. One attendant should be available during all working hours.



## THE DISPENSARY

A separate room should be provided, if possible. Patients should have reasonable privacy. If it is not practicable to partition the dispensary into a waiting room and a treatment room, a screen can be used.

The first-aid room should have:

1. Good lighting
2. Adequate ventilation and comfortable temperature
3. Basin with hot and cold running water
4. A quiet location
5. Floors of durable and easily cleaned material
6. Toilet facilities

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A compact and well-equipped dispensary. Acoustical tile is used for ceiling; asphalt tile for floor and plywood for walls. (The Austin Co.)

The first-aid room should be quiet, well ventilated and away from doors. Windows should be screened to keep out insects.

Furnishings should be simple and neat. The color scheme has an important influence on patients and the trend is away from the "hospital white." Walls painted with semi-gloss enamel in light tints of green, cream, or buff are cheerful and easy to keep clean.

A patient who is nervous or in a state of shock may be upset still more by intricate patterns on walls and ceilings.

The floor should be resilient and easy to clean. Linoleum, rubber tile, vinyl tile and asphalt tile are practical for dispensary use. Damp cloths for dusting and a sweeping compound avoid raising dust.

**Equipment.** For a dispensary with a registered nurse in charge under the supervision of a part-time physician, equipment might include:

1. Two white enameled chairs and a bench
2. Enameled top table or desk
3. Stool
4. One or more beds or cots
5. Linen and blankets
6. Waste can with cover
7. File for medical records
8. Floor lamp
9. Treatment table and instrument cabinet
10. Medicine chest
11. Small sterilizer
12. Small items of office and surgical equipment, such as basins, pitchers, rubber gloves (sterile), scissors, tweezers, forceps, hot water bottle or electric heating pad, ice bag
13. Stretcher
14. Telephone



Dispensary records, as well as treatment of injuries, are important in maintaining safety.



First-aid kit, goggle-cleaning station, stretcher and fire extinguisher mounted on column in convenient location. (Medical Supply Co.)

#### FIRST-AID SUPPLIES

The dispensary operated under full-time medical supervision will naturally carry a wider assortment of instruments and supplies, including many items not ordinarily used by laymen. If the first-aid room is staffed by non-medical personnel keep the setup as simple as possible.

The supervising physician should be consulted about the selection of materials, particularly when medication is involved. He should select such items as first-aid antiseptics and burn dressings.

Unit first-aid material is replacing bulk first-aid supplies for smaller plants, for small groups detached from a central headquarters, men working in isolated areas where medical help is not available, and on trains, buses, trucks, and airplanes.

Unit first-aid material is desirable for such groups because each dressing and treatment is an individual unit, for one-time use only. Materials can be kept in sanitary condition for long periods. There is more likely to be a sufficient quantity and wider assortment of bandages.

To simplify maintenance of industrial first-aid kits and to establish commercial standards for sizes of unit cartons and kits, the Division of Simplified Practice, National Bureau of Standards has compiled Code R178-41 in cooperation with industry.

Kit sizes and their contents are determined by the number of persons to be protected, with consideration to the nature and frequency of injuries likely to occur. Kits come in 10, 16, 24, and 36 unit sizes. A 24-unit kit for example, would be suitable for a group of 50 men.

Specifications outlined in Federal Specifications GSK-391 (Amended) are generally accepted and used by manufacturers in the production of unit first-aid material and kits.

For operations under federal regulation, assortments have been specified although these may not fit all local requirements. Contents of kits include the following:

- Adhesive bandages
- Burn compound
- Burn solution
- Petroleum gauze
- Ammonia inhalants
- Antiseptic swabs
- Antiseptic applicators
- Tincture green soap
- Eye packets
- Bandage compresses—2, 3 and 4 inch
- Tourniquet
- Forceps
- Scissors
- Triangular bandages
- Gauze bandages
- Gauze pads
- Gauze compress
- Adhesive tape
- Aspirin or other analgesic
- Soda bicarbonate tablets
- Poison ivy ointment
- Insect repellent

If the kit is to be used in any section of the country where poisonous snakes are likely to be encountered, a snake-bite kit should be included.

The unit system does away with many of the objections to first-aid kits but a competent and conscientious employee should be responsible for dispensing the supplies. Employ-



Ambulance with roll-away stretcher and oxygen unit on 24-hour call for benefit of employees. (F. & M. Schaefer Brewing Co.)



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ees may help themselves, often for home use, and supplies may not be replaced. Also, self-treatment should be discouraged.

For the smaller plant, ideal quarters for a first-aid station may not be available but the best possible spot should be chosen. It should be readily accessible to the working zone and convenient for supervision and maintenance.

A lavatory with hot and cold running water and toilet facilities should be available.

Reasonable privacy is desirable, both for the patient and for the possible effect on those working in the area. If a separate room is not available, a screen can be erected.

Equipment may be selected from lists suggested for dispensaries, keeping in mind the limitations of space and the requirements of the plant. The following are essential:

1. Desk or table for filling out reports and records.
2. Chair or stool.
3. Filing cabinet for records.
4. Waste can with cover.
5. Bulletin board.
6. First aid manual.

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Recommended for Large Wound Dressing, Control of Hemorrhaging, Pressure Dressing for Burns and Immobilization of Injured Areas.

Descriptive literature sent on request.

Specialists in Unit Type and Industrial Type First Aid Kits. FREE descriptive literature sent upon request.

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## DISPENSARY RECORDS

Accurate records should be kept of all treatments. If injuries are infrequent, a small day book may be sufficient, if kept systematically. Entries should include these details:

1. Date and time of injury.
2. Date and time injury was reported for treatment.
3. Name of injured.
4. Address of injured.
5. Where and how injury was received.
6. Names, addresses and telephone numbers of witnesses.
7. Nature of injury.
8. Kind of treatment given, and by whom.
9. Whether employee returned to work after treatment; if not, when.

## FIRST-AID ANTISEPTICS

Infection of an open wound can be prevented by killing the germs already present or by removing them mechanically and preventing the entrance of more. It is in this second theory that soap and sterile water are used in aseptic treatment of wounds.

Careful and thorough washing with soap will mechanically remove the organisms and a sterile bandage will prevent entrance of more. Very few are destroyed by ordinary soaps in the process.

Germicides, including phenol and mercury compounds, have been used in soaps but their effectiveness requires too high a concentration for ordinary use. But results have been reported from hexachlorophene for general as well as surgical use.

Many substances will kill germs in a test tube but a first-aid antiseptic must kill them in the presence of body substances and not kill too many of the body cells at the same time. Choosing the proper one should be left to the doctor in charge.

Corrosive sublimate (mercury bichloride), for instance, is very effective but injurious to tissues. Compounds such as merthiolate, merphenyl and mercurochrome are devised to get the antiseptic properties of mercury without its toxic effects.

The halogens (tincture of iodine and Dakin's solution) have been widely used because of their strong oxidizing action. They are even stronger than hydrogen peroxide which is used for the same reason.

The various antibiotics (sulpha compounds, penicillin, terramycin, etc.) are not antiseptics although they are very useful in treating infections. They should be used only under medical supervision.



A well-equipped ambulance, air-conditioned for desert heat, follows movie actors on location. Less elaborate mobile first-aid units are used by construction companies, and public utilities for operations away from headquarters.

## TRANSPORTING THE INJURED

Where there is any doubt about moving the patient, medical aid should be brought to the scene of the accident, if at all possible. Lifting a patient into a car may aggravate injuries.

Before the patient is moved he should be treated for possible shock. Fractures should always be splinted.

**Stretchers.** The army type is easy to handle. It can be used as a cot at the scene of the accident, in transit, and at the first-aid room or hospital. It is frequently stored in a canister in a conspicuously marked spot to keep it clean and ready for use.

Collapsible stretchers may be folded when not in use and carried in an automobile. Some are equipped with wheels and an adjustable head rest.

Bandages, splints and stretchers may be improvised in emergencies when regular equipment is not available. Improvisation is part of first-aid training. Where men are at work, however, approved first-aid equipment and supplies should be kept on hand.

## FIRST-AID TRAINING

The American Red Cross first-aid textbook and the U. S. Bureau of Mines manual of first-aid instruction are recommended for teaching first-aid. It is often found that accidents are less frequent among persons trained in first aid and it is advisable to have as many employees as possible receive this training.

# ...planning or improving a dispensary?

CLINICAL  
LABORATORYPHYSICAL  
EXAMINATION  
ROOMEMERGENCY  
TREATMENT ROOM

EXAMINATION AND TREATMENT ROOM

RECOVERY  
ROOM

## .....let aloe help you

Modern industrial health care is increasingly concerned with the general health of employees as well as the routine treatment of the injured. If you plan to expand existing facilities or establish an entirely new department, A. S. Aloe has a planning department staffed with medical equipment experts, prepared to help you with layouts and suggested equipment lists. Our planning service is designed to save valuable time and relieve you of the burden of endless detail in preparing floor plans, check lists, etc. The illustrations above show the Aloe-equipped medical and laboratory installations of the Atlas Powder Company's plant in Chattanooga, Tennessee. Here, the employee is placed in an atmosphere equal, in every respect, to that of the private physician's office, and is therefore relieved of any possible doubt that he is the beneficiary of superior medical care. Please write for complete details.

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# RESUSCITATION

## Methods and Equipment

**THOUSANDS** of victims of suspended breathing due to asphyxiation, drowning, electric shock, and other causes have been saved by artificial respiration applied by trained persons.

The Arm-Lift, Back-Pressure Method, recently introduced, has been adopted officially by the American Red Cross and other organizations, and is being taught to an increasing number of persons.

This method can be applied immediately without apparatus, which is important in all cases of suspended respiration. It is more efficient than the Schafer prone-pressure method which was widely taught for many years and saved many lives.

**Mechanical resuscitators** are used by fire departments, hospitals and by some industries where asphyxiation or electric shock hazards are

serious and where apparatus and trained personnel are immediately available.

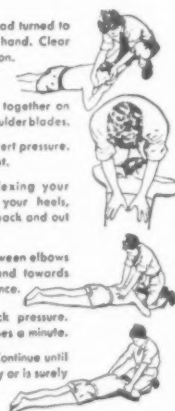
Such apparatus can be used where injuries to the patient might prevent use of manual resuscitation. It also gives more air exchange and does not get tired.

**Mechanical resuscitators** are for use only by persons trained in their operation. The American Medical Association lists devices accepted for use by hospitals and medical departments.

**The inhalator**, which supplies oxygen to the patient under low, continuously positive pressure, is used with manual resuscitation. It is particularly valuable in cases of gas asphyxiation and has become part of the equipment of fire departments and rescue squads. The inhalator, by itself, does not produce respiration

## ARTIFICIAL RESPIRATION (Arm-Lift, Back-Pressure Method)

1. Lay victim on stomach, head turned to one side, cheek on one hand. Clear mouth, throat of obstruction.
2. Kneel at victim's head.
3. Place hands, thumb tips together on victim's back just below shoulder blades.
4. Rock forward slowly to exert pressure. Keep your elbows straight.
5. Release pressure by flexing your elbows. Rock back on your heels, sliding hands up victim's back and out along arms.
6. Grasp arms half way between elbows and shoulders. Pull up and towards you until you feel resistance.
7. Lower arms, repeat back pressure. Repeat cycle 10 or 12 times a minute.
8. Do not interrupt rhythm. Continue until victim is breathing strongly or is surely dead.



**NOT too HEAVY—NOT too FAST.** Let someone else loosen tight clothing, go for help, get blankets. You haven't time.

NSC Safety Instruction Card No. 781

and should not be confused with mechanical resuscitators.

Use of pure oxygen, rather than the mixture of oxygen and carbon dioxide formerly used, is recommended by the Council on Physical



**CONTENTS** — sterilized bandages, compresses, gauze of varying types and sizes, tourniquet, forceps, burn ointment, splint, iodine applicators, aromatics and related supplies.

**CABINETS** — dustproof, moistureproof, wall-mountable, portable, electrically welded of 20-gauge heavy-duty steel. DROP COVER serves as convenient utility shelf.

**4 AVAILABLE SIZES** — containing from 10 to 36 replaceable units, packed in related multiples to meet potential contingencies.

# WHAT HAPPENS?

What protection does your plant provide should an accident occur while part-time physician or nurse is away from the premises . . . an important point also for the small shop without medical facilities.

## PAC-KIT® provides FIRST AID . . . on-the-spot

Cabinets contain supplies and accessories for instant application in burns, lacerations, eye injuries, gross bleeding, fainting, fractures, and allied injuries common to industry. Contents readily applied by average employee. Assures immediate relief for injured until medical assistance can be summoned.

PAC-KITS are goodwill builders, too. Strategically located they improve management-employee relationship . . . visitors and insurance underwriters are impressed.

**WRITE TODAY** for complete descriptive literature and prices.

**The PAC-KIT Company • P. O. Box 1306, Greenwich, Connecticut**



Medicine of the American Medical Association.

Some types of apparatus combine the functions of resuscitator, inhalator and aspirator, restoring breathing, administering oxygen and removing from the throat secretions which might hinder breathing.

The "Eve" or rocking method uses a stretcher over a support on which the patient is see-sawed up and down. This method is used by the British Navy and the U. S. Coast Guard. A folding stretcher and support can be carried in an automobile.

Application of manual resuscitation should never be delayed while waiting for apparatus.

### Objectives of an Industrial Nursing Service

(Copyright American Association of Industrial Nurses Journal).

The industrial nursing service should be administered and staffed by registered professional nurses. Industries and companies vary widely—so do the policies governing the types and amounts of professional nursing service to be provided and the administrative methods of supplying service. The objectives are the same for all nursing services. Varying conditions may limit or modify the practical goal of achievement.

The major objective of any industrial nursing service is to provide a nursing program for employees which will help them maintain the highest potential level of health and efficiency.

Contributory objectives are:

- To give competent nursing care and treatment.
- To obtain medical direction where none exists.
- To adapt the nursing program to serve the health needs of the company with respect to its character, size and location.
- To have and maintain adequate space, equipment and supplies.
- To have and use an adequate record system.
- To maintain good working relations with all departments of the company.
- To maintain cooperative relations with local physicians and health and other community agencies.
- To maintain good relations with the general public.
- To upgrade the quality of the nursing service through continual and professional growth.
- To evaluate the nursing program periodically and revise it to meet changing needs.



**check your  
snake bite kit  
now . . .**



**be sure your workers  
are provided dependable,  
instant first aid with the**

### IMPROVED SAUNDERS' SNAKE BITE KIT


Now's the time to carefully check each worker's snake bite kit to see that every detail is in order—everything is ready just in case! If you need more kits, remember this: The *Saunders' Kit* has the only venom-suction pump with a guarantee . . . does not have to be lubricated in the field . . . no glass to break. The only pump with three adapter sizes . . . easier to use, less discomfort to patient. Provides *instant* first aid with *controlled* suction that is increased as desired . . . and easily, quickly administered by the victim alone if necessary. Kit contains everything needed for emergency use . . . suction pump, adapters,

tourniquet, lancet, bandages, antiseptic, inhalants, instructions. Order from your MSCO distributor or write for data.

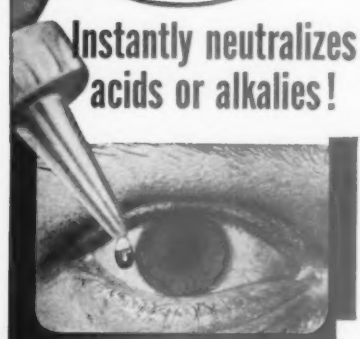


*Specialists in first aid*

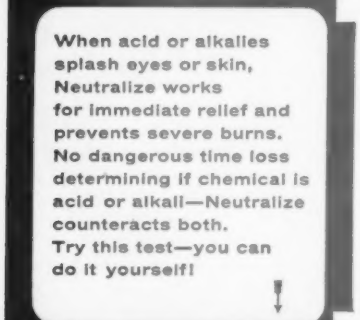
**Medical Supply Company**  
Rockford, Illinois • In Canada, It's Safety Supply Company



**Instantly neutralizes acids or alkalies!**

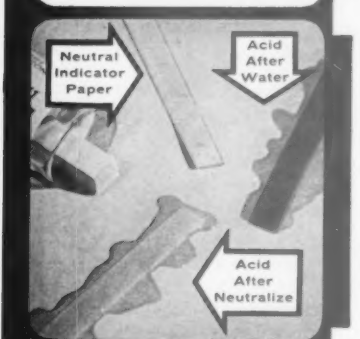


**When acid or alkalies splash eyes or skin, Neutralize works for immediate relief and prevents severe burns. No dangerous time loss determining if chemical is acid or alkali—Neutralize counteracts both. Try this test—you can do it yourself!**



**NEUTRALIZE OBSOLETE WATER DILUTION TREATMENT!**

Write for instructions on the Do-it-yourself test for Neutralize, or call your Bullard distributor.



**EVERYTHING BULLARD IN SAFETY**

**BULLARD**

E. B. BULLARD COMPANY, 275 Eighth St., San Francisco

## Medical Service

—From page 282

**Dentists.** Injuries to the teeth are relatively infrequent in industry and such cases are usually sent outside for treatment. The medical department should have a list of dentists qualified to treat such injuries.

The importance of oral hygiene has led many companies to provide dental examinations, sometimes including full-mouth x-rays. The findings are usually referred to the employee's dentist since few companies provide restorative dentistry.

### HEALTH AGENCIES

Among agencies furnishing helpful data on general and specialized phases of medical service, first aid and industrial hygiene are the following:

United States Public Health Service  
United States Department of Labor  
American Standards Association  
Industrial Hygiene Foundation  
Atomic Energy Commission  
State and Municipal Health Departments

### MOBILE CLINICS

A recent development in industrial health service is the mobile clinic which makes it possible to extend medical coverage to more employees.

### MEDICAL FACILITIES

#### Recommended Standards

1. In plants of 500 or more, a full-time nurse should be in attendance. A physician should be present at the daily dressing hour.
2. Number of treatment rooms:  
50 to 500 employees ..... 1  
500 to 1000 employees .... 2  
1000 to 5000 employees ... 3  
5000 to 10,000 employees .. 5
3. For plants of more than 1,000 employees the dispensary should be equipped with bath and toilet, equipment for minor surgery, and other apparatus and supplies selected by the physician in charge.
4. One or more beds should be provided where severe cases may be made comfortable during observation or while waiting for transportation to a general hospital.
5. An x-ray room, if facilities are not available in a local hospital or physician's office.
6. The hospital should be under full charge of the company physician.

The simplest type, which consists of a trailer towed behind a car or station wagon, is equipped to give some of the simpler tests.

Most elaborate is a bus type vehicle housing facilities for visual, hearing, and x-ray examinations, which is practically a self-sufficient medical department and laboratory on wheels.

### Cleanliness in the First-aid Room

**BECAUSE** of the chance of infection, surgical cleanliness of instruments and materials and rigid precautions during treatment are of extreme importance in the treatment of any injury.

To the physician and the nurse, cleansing the hands thoroughly and keeping equipment and supplies free from contamination have become second nature. The first-aid attendant, called from his job to treat an injury, may overlook these important precautions.

Supplies (bandages, gauze, instruments, etc.) should be kept in cabinets. Supplies purchased in packages remain sterile until opened. Unit dressings are favored in many dispensaries under medical super-



Poison ivy, poison oak and sumac no longer need bother your men when they use MSCO POISON IVY OINTMENT for prevention or cure. Remember, MSCO is headquarters for poison ivy first aid: Unit A-20 Zircreme, 6 per unit; Zircreme (clinical) 1 lb. jars; Unit A-17 Poison Ivy Ointment, 6 per unit; Unit 102A Poison Ivy Wash, 4cc., 6 per unit; Unit 164A Poison Ivy Wash, 10cc., 3 per unit. See your MSCO distributor, or write for illustrated poisonous plant identification guide.



**MEDICAL SUPPLY COMPANY**  
Rockford, Ill., In Canada, It's Safety Supply Co.

vision and should always be used when a part-time attendant is in charge and for isolated groups.

With individually packed dressings there is no waste and no contamination of unused supplies. A useful item is the finger compress which can be applied without touching the part next to the wound.

After treatment, instruments should be cleaned and sterilized and allowed to dry. Soiled dressings should be disposed of out of sight of patients. A closed can with self-closing foot-operated cover is a useful item.

Sterilizers are used to sterilize instruments such as forceps, tweezers, etc., by subjecting them to boiling water or live steam. Boiling for 10 minutes is advised.

Hands cannot be made absolutely sterile but reasonable standards of personal cleanliness should be maintained. While unit dressings make it possible for a person with dirty hands to apply a sterile dressing without contaminating it, only an emergency would justify it.

Clean towels (cloth or paper) and soap, preferably liquid or powdered in a dispenser, should be available. A nail brush should be used.

## Non - Traumatic CARRIER

The use of the NON-TRAUMATIC CARRIER allows you to transport the injured without disturbing them from the position in which they are found.

This is important. Any movement to a patient with a broken back, neck, or internal injury can result in

1. Further Complications
2. Paralysis
3. Death

The use of NON-TRAUMATIC CARRIER allows you to apply the "carrier to the patient" instead of "patient to the carrier".

Moving the injured from the scene of the accident in an improper manner increases the risk of further injury.

The NON-TRAUMATIC CARRIER is being used successfully by the U. S. Government, Industry, First Aid Squads, Police and Fire Departments.

Send for illustrated brochure.

## SAROLE, Inc.

228 N. Wood Avenue  
Linden, N. J.

Here is recommended wash-up procedure:

1. Clean finger nails by scrubbing with soaped brush and warm water, up and down the nails and across the finger tips.

2. Then scrub inside of hands and between fingers.

3. Then outside of hands and arms beyond the elbow. A short-sleeved shirt or jacket is recommended.

4. Rinse so that water runs off the elbows. Finally, wash with a sponge dipped in alcohol.

Patient's clothes or hands should not come in contact with a wound. Wounds may also become infected by secretions from the nose or throat.

If extensive dressing or cleansing of a wound is indicated, severe bleeding should be checked, the patient placed in a comfortable position and the injury covered temporarily.

### If You Touch Poison Ivy

Poison ivy and poison oak are menaces to farm, construction, highway and public utility workers as well as to vacationers. Some persons seem to be able to touch it without ill effects but others are poisoned by the slightest exposure. In some persons poisoning is difficult to cure.

Both poison ivy and poison oak produce an oil which, even in small quantities, causes severe irritation of the skin. The amount necessary to cause an infection is so small that the poison may be carried by the smoke from burning plants or may be transmitted by clothing or insects.

Symptoms usually appear within 7 to 10 days following exposure. Small blisters appear which gradually unite to form larger blisters. These are filled with pus, and scratching usually opens them, allowing the pus to run over unaffected areas of the skin, thus spreading the disease. If not given medical attention, the rash may spread over a large portion of the body, causing a high fever and great discomfort.

The best method of preventing infection is to avoid contact with the plants. If a crew has men who are immune, these should be sent ahead to clear the path of poison plants. However, the fact that a person is immune from the poison at one time does not mean that he will always be immune.

As soon after exposure as possible, the exposed areas should be washed thoroughly with plenty of



## EMERGENCY TREATMENT FOR BURNS



### FIRST ON BURNS

A touch of the button on top of the F.O.B. container brings instant relief to painful burns from sun, fire, electricity or scalds. F.O.B. aids healing and protects against infection. It is non-toxic, non-irritating, and can be safely sprayed on any part of the body.



### BURN KITS

For treatment of chemical and heat burns. Available in 3, 5 and 11 oz. spray containers. Write for laboratory test reports on F.O.B. with specifications for new Burn Kits.



E. D. BULLARD COMPANY, San Francisco, California

# BULLARD

## EMERSON Resuscitators

"Simplest and Safest"

**SIMPLE** to operate.

**SAFE** for adults, children, or infants.

**ACCEPTED** by the American Medical Association since 1942 for use by laymen.

**PROVIDE SUCTION**, alternating with pressure, to give vital aid to the circulation. Write for *free Medical References on Resuscitation*.

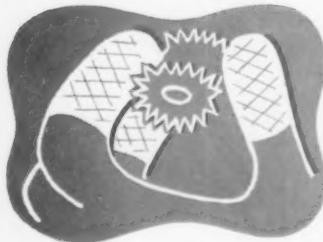
**NOTE:** The first few minutes after breathing has ceased are the most critical. Manual artificial respiration should be started immediately and continued until the resuscitator is in use. Write for free bulletins, *Emerson Method of Artificial Respiration* and *Emerson Portable Resuscitators*.

**J. H. EMERSON CO.**  
CAMBRIDGE 40, MASS.



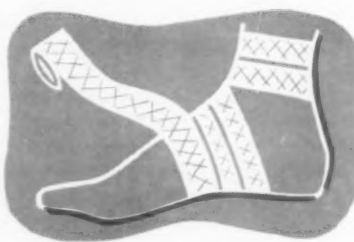
## GAUTTEX Helps You 2 Ways

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**Gauztex protects fingers.** Handling of sharp or abrasive objects speeds up with Gauztex wrap-around protection. Sticks only to itself and lets skin "breathe." Gives a sure grip and natural feel. Send for **FREE** sample to test under your own conditions.

### IN FIRST AID



**Bandages better and faster.** Sterilized Gauztex is widely used by industrial doctors and nurses. Neat and compact, it sticks only to itself. Saves time in applying and removing. Promotes healing by letting skin "breathe." Regular or oil-resistant. Send for your **FREE** sample.

**GENERAL BANDAGES, INC., DEPT. NS-3**  
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Please send information and sample roll of:

☐ Industrial ☐ Sterilized GAUTTEX

Firm \_\_\_\_\_

Name and Title \_\_\_\_\_

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hot water and soap, preferably laundry-dry soap. Make a thick lather several times, but do not use a brush; that would increase the danger of poisoning. If possible, affected areas should then be washed with rubbing alcohol and rinsed with clear water.

If a rash develops in spite of precautionary measures, the areas should be washed with hot water and soap, then with rubbing alcohol, and in addition a 5 per cent solution of ferric chloride should be applied. The solution should be applied once or twice a day until the rash has disappeared. The same solution may be used as a preventive on parts known to have been exposed.

## The President's Medal

Awards made by the National Safety Council for successful application of artificial respiration

RAOUL E. ROQUES, police officer, New Orleans Police Department, New Orleans, La.—drowning.

RUSSELL E. HENDERSON, letter carrier, Avon-by-the-Sea Post Office, Belmar, N. J.—drowning.

MARY CURTIS, student, Prairie Du Sac, Wis.—drowning. Certificate of Assistance to WILLIAM AYLWARD.

HILTON P. FERGUSON, stillman helper, The Texas Company, Groves, Texas—drowning.

EARL E. HENNINGER and GEORGE A. AYRES, linemen, Atlantic City Electric Co., Atlantic City, N. J.—drowning.

JAMES E. BLACKIE, lineman, Public Utilities Commission, Galt, Canada—drowning.

M. V. BURLESON, machinist foreman, Oklahoma Gas & Electric Co., Oklahoma City, Okla.—drowning.

MICHAEL C. MATARAZA, volunteer fireman, Milton, N. Y.—gas asphyxiation.

CHARLES W. SMITH, welder, Ashland Oil & Refining Co., Grayson, Ky.—gas asphyxiation.

DANA LISK, checker, The Texas Company, Staten Island, N. Y.—drowning. Certificate of Assistance to FRANCIS G. GIBLIN.

CAPTAIN LLOYD B. SHONE, MC, United States Navy, Washington, D. C.—suspended respiration due to obstruction in windpipe.

JOSEPH J. SPEIGEL, station electrician, Wisconsin Electric Power Co., Milwaukee, Wis.—drowning.



## Emergency Nursing Procedures

The nurse or first aider may encounter emergencies where life depends on prompt application of treatment before the physician can arrive. The following general principles apply:

1. Call a physician immediately.
2. Stop bleeding.
3. Restore breathing.
4. Prevent shock and infection.

... But do no more than is actually needed.

### Bleeding and Shock

Either of these can be killers and first aid courses emphasize the importance of prompt treatment. The physician should be notified. Sometimes, however, the situation may call for judgment on the part of the first-aider whether to call the doctor first or to apply emergency treatment. That, of course, would depend on distance from a telephone, the availability of a messenger, or other circumstances. Certainly, first aid for excessive bleeding, suspended

breathing, or severe shock should not be delayed.

**Bleeding.** Following is the recommended procedure:

1. Expose the wound.
2. Remove loose surface foreign matter.
3. Apply pressure.

Direct pressure firmly applied over sterilized gauze at the point of bleeding will usually control moderate hemorrhage. Indirect pressure is indicated where there is excessive bleeding not controllable by direct methods.

Digital compression over the vessel against underlying structures either adjacent to the wound or at the nearest pressure point will usually suffice until the physician arrives.

Indirect pressure should be applied proximal or distal to the wound, depending on whether the bleeding is arterial or venous.

Hemostats or clamps should be applied only when the emergency

warrants it and the foregoing measures prove ineffective. Avoid applying a tourniquet if possible. If severe bleeding in an extremity suggests need for a tourniquet, apply a blood pressure cuff.

**Remember:**

1. A direct pressure bandage should not be used as a tourniquet.
2. Release tourniquet every 15 minutes.
3. Do not apply dressing over tourniquet.
4. Observe sterile precautions.

**Shock.** Symptoms of shock following injury are pallor, perspiration and rapid, thready pulse. Early and adequate treatment for shock is life saving. Emergency management should include:

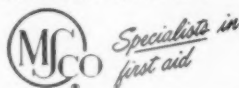
1. Remove cause. If shock is due to hemorrhage, check bleeding. If due to wounds not associated with bleeding, active treatment of injury should wait until shock has been treated. Cover wounds with sterile dressing to prevent infection.
2. Relieve pain. Narcotics or barbiturates may be administered on telephone or written order by physician.

## BURN! PAIN... SHOCK... SPRAY IT!

... the best and safest method for the "first aider" because he doesn't touch the patient!

### QUICK, THOROUGH, PAINLESS, ASEPTIC...

Doctors agree that certain basic conditions are present in all burn cases. The "first aider" is qualified only to deal with the first three: Relieve Pain, Prevent Infection, Treat Shock. Spraying burns does this best. And the MSCO assortment of Burn Spray Kits is the largest ever offered. Americaine or Kip Antiseptic Oil in either compact Unit-Type Packets with Pressure Cartridge Spray or Complete Burn Spray Kits; Aerosol Dispensers of Foille, Americaine, and Kip; Foille and Hydrosulphosol Burn Spray Kits; Fire Department Kits. MSCO also supplies all standard burn ointments in unit form for first aid kits. See your MSCO distributor or write for details.



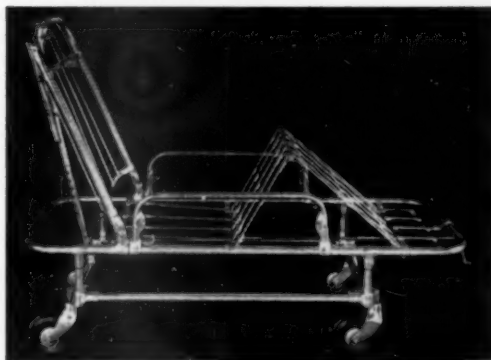
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National Safety News, March, 1956



### STRETCHERS

AND A COMPLETE LINE OF AMBULANCE  
COTS. We Manufacture All Kinds.



Let WASHINGTON's progressiveness and reputation for 'finer' equipment  
be your guide in buying the BEST.

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238 SO. FAYETTE ST. — WASHINGTON C. H., OHIO

## WASHINGTON Greatest Name in Cots

COT & STRETCHER EQUIPMENT  
TO FIT ANY VEHICLE.

OR FOR ANY FIRST AID ROOM  
REQUIREMENTS.

### THIS NEW WASHINGTON KONTOUR COT

offers exclusive features not available in any other cot! The cot can be carried properly, no need to keep head low and foot end high. It easily shortens from 75" to 52" for easier turning, and at the same time patient is made more comfortable. Both patient and mattress stay in place without straps or holding, no matter how steep the carrying angle. The patient is more completely relaxed, feels more secure, with no fear of falling! A simple hand crank raises the bed section under the patients knees, as the cot length is shortened.

## WHEN SECONDS COUNT!

PATENT APPLIED FOR



### IPCO "WASH-AWAY" BOTTLE

Medical authorities agree that immediate washing with plain water is the first requisite in the event of corrosive material entering the eyes, seconds saved between contact and eye washing being a determining factor in the degree of eye injury.

The IPCO WASH-AWAY BOTTLE was developed as a means of providing individual workers or small groups with a supply of water within reach for immediate washing of the eyes in the case of accidental exposure. . . . Bottle of unbreakable Polyethylene plastic provides a continuous flow of 7 to 8 minutes duration. A sound first-aid procedure.



WRITE FOR BULLETIN NO. 91

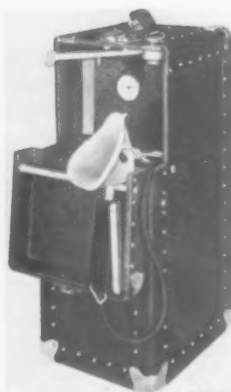
*Safety Equipment for all Industries*

**INDUSTRIAL PRODUCTS COMPANY**

2850 N. Fourth Street

Philadelphia 33, Pa.

## IDM EMERGENCY OXYGEN INHALATOR



A new light weight—simpler oxygen inhalator—preferred—is in use in National Industry in U. S. and Canada—

So light, yet boasting a long oxygen flow—furthermore—no training required.

A truly remarkable item for your plant—first aid room or vehicles.

Write for information or demonstration.

### EMERGENCY OXYGEN INHALATORS, INC.

654 Madison Ave., New York 21, N. Y.

3. Keep patient warm and dry and on his back with his head low.

**Suspended breathing.** See respiration.

#### Routine Treatment

Prompt treatment, meticulous cleansing and dressing, and examination of both deep and superficial structures are essential in the management of injuries. Routine nursing care should be confined to care of minor wounds as follows:

1. Protect wound with sterile gauze while cleaning adjacent areas with soap and water or special detergents.
2. Discard protective dressing and clean wound margins.
3. Irrigate wound with sterile water or isotonic solution of sodium chloride.
4. Apply antiseptic selected by the physician.
5. Apply sterile dressing, interfering as little as possible with function. Sterile dressings should be covered with protective material for use at work.
6. The worker should be instructed not to remove the dressing. If it becomes loose or uncomfortable he should return to the dispensary.

#### Detergent Chases Radioactive Soil

In the unhappy event that an atomic bomb ever is dropped in the United States, many lives may be saved by an inexpensive chemical originally produced to prevent scale in boilers, but now available in thousands of grocery stores and used by many commercial laundries.

It is a chemical that was discovered more than a hundred years ago but was never produced commercially until 1930 because nobody could find a use for it. Now its applications are so many that more than 100 million pounds are manufactured and sold annually.

Scientists refer to it as sodium hexametaphosphate. Housewives buy it in stores under the trade name, "Calgon," as a water conditioner.

The chemical has a rather remarkable ability to "sequester" certain of the minerals contained in water, so that they are washed down the drain instead of sticking around to cause damage. It was first used in power plants in order that calcium and magnesium salts in the water system would be washed away instead of

accumulating on the walls of the boiler tubes as a "scale."

The same minerals, calcium and magnesium, cause the "hard water" problems that harass housewives in most parts of the country, making it difficult to get clothes and dishes clean, and building up an objectionable "ring" in the bath tub. Sodium hexametaphosphate was introduced in its domestic form of "Calgon"—signifying "calcium gone"—to overcome such annoyances.

Recent research, concerned with problems of the atomic age, has shown that the chemical also is useful in reducing radioactive contamination. This knowledge is proving beneficial today to laboratory workers who use radioactive materials in experiments; it could be a life saver for millions in the eventuality of an atomic war.

The fall out of radioactive particles constitutes one of the greatest threats of atomic warfare. Carried many miles from the area of an explosion, the particles settle on trees, buildings, plants, animals, and people. Prolonged exposure to them, either directly or by wearing contaminated clothing or eating contaminated food, may cause serious illness or death. The particles cannot be easily dis-

posed of but happily the radioactivity can be removed from these materials by Calgon and water.

An exhaustive study in the field of decontamination methods was made by Foster D. Snell, Inc., of New York, an organization of consulting research chemists. Conducting hundreds of tests, researchers for this organization applied specimens of radioactive soil to various substances, causing the substances to become "hot" with radioactivity. They then cleaned each substance with water containing 1 per cent of a soap or synthetic detergent, testing with ten different widely known products. Tests were made to determine the amount of radioactivity both before and after cleaning, as an indicator of the effectiveness of each compound tested.

The results varied greatly with the different products. Applied to cotton fabrics, one of the heavy duty detergents removed 87.8 per cent of the radioactive contaminants.

When Calgon was added to the soap or detergent, the percentage of contaminants removed increased in every case. The minimum result was a 94.8 per cent removal; one combination of Calgon and a detergent removed 99 per cent of the contaminants.

There was only one exception to the general findings in these tests. In washing plaster walls, it was found that water alone removed more of the radioactive soil than did water with soap or detergent added.

Calgon's effectiveness in removing radioactive contamination is regarded as another result of its sequestering ability. Tied up in a chemical complex, contamination is washed away with the water and eventually loses its power to cause harm.

The Snell organization's findings are bolstered by a recent report NYO-4990 issued by the Technical Information Service of the United States Atomic Energy Commission concerning a study at Johns Hopkins University. Thirteen different "agents," including complexing substances, detergents, and general purpose mixtures, were tested as to their relative effectiveness in removing water-soluble contamination caused by five radioactive contaminants. Calgon, one of the complexing agents, was given a rating of 10, indicating maximum efficiency, with relation to four of the contaminants. With relation to the fifth contaminant, a detergent including Calgon received a rating of 8, the highest given in this category.



Do you have the protection of a SAUNDERS' SNAKE BITE KIT? Are you always ready just in case? The SAUNDERS' KIT has the only venom-suction pump with a guarantee . . . does not have to be lubricated in the field . . . no glass to break. The only pump with three sizes of adapters . . . easier to use, less discomfort to patient. Accepted for advertising in publications of A.M.A.

Order from your MSCO distributor today or write for data.



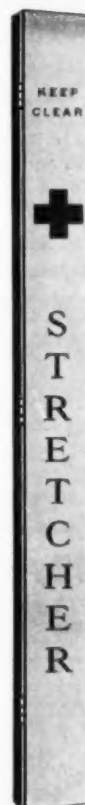
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Rockford, Ill., in Canada, it's Safety Supply Co.

National Safety News, March, 1956

## JUNKIN STRETCHERS

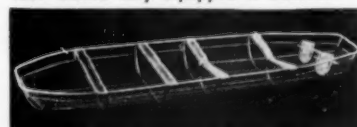
### STRETCHER CASE

**\$2380** FOB  
Louisville



**YOUR  
PLANT  
NEEDS  
STRETCHERS**

The Junkin Stretcher Case affords a convenient and compact cabinet for storing the army type stretcher, blankets and first aid equipment. It provides a definite location for the equipment and protects it against the deteriorating effects of dirt and grime. And because it's compact it's a SPACE SAVER tool Comes fully equipped if desired.



### JUNKIN SPLINT-TYPE STRETCHER

Construction permits patient to be carried horizontally or lifted vertically without danger from inaccessible locations. Canvas straps and footrests keep patient rigid and comfortable. For complete information write for free descriptive literature.

**JUNKIN**  
**SAFETY APPLIANCE CO.**  
101 S. FLOYD ST.  
LOUISVILLE 2, KENTUCKY



## Cure for Common Cold Predicted

A yet-undiscovered drug—not a vaccine—is the best bet for a cure or preventive for the common cold, and it ought to come within five years.

This was the prediction of Dr. John S. Dingle, Western Reserve school of medicine, Cleveland, at a recent symposium sponsored in New York by the Common Cold Foundation, an organization sponsored by a large number of industrial firms.

A drug to control colds would have to strike at the virus or viruses causing colds—something present “wonder drugs” do not do. The problem in seeking a vaccine is that having one cold doesn’t give a person immunity for very long against another one.

Dr. Dingle and Dr. Howard S. Diehl, University of Minnesota, explained that human psychology makes it difficult to measure the effectiveness of any treatment for a cold. They reported tests in which people thought they had up to 60

per cent fewer colds if they were given one of the present cold vaccines or various pills, or other treatment.

The fact is that people given worthless dummy pills or shots reported exactly the same amount of benefit, compared with people getting no treatments at all.

Dr. Dingle reported these findings from long-term studies of entire families:

- Children get more colds than adults, and boys more than girls.
- Among adults, women have more colds than men.
- Home seems to be the chief place for spreading colds. If a school child brings home a cold, usually half the rest of the family gets it. But if an adult brings it home, only 20 per cent do.

Dr. Dingle said that no present drug or agent will specifically cure or prevent a cold, though some will make the patient feel better. He listed the best bets as aspirin, codeine, and atropine.

## ARE YOU SURE ABOUT RADIATION SAFETY IN YOUR PLANT ?

If you do not know accurately the total exposure received by each of your personnel working around x-rays (or radioactive materials) you may be overlooking an important phase of their safety.

Our film badge service furnishes weekly exposure reports covering each individual. Besides aiding employee safety, our service provides maximum legal protection to your firm.

To find out more about this essential service write for booklet S:

**R. S. LANDAUER, JR. & CO.**

24 Plaza — Park Forest, Ill.

“A Professional Service for Radiation Safety”

This man had  
**3 TRIPS to  
FIRST AID ROOM**

This man's  
**SPOILAGE**  
was too high

This man was  
**GROUCH**

Make sure that every employee's eyes are **working efficiently TOGETHER**, and you solve many of your plant's problems.

Managers who have adopted these visual checks are reporting: 44% fewer accidents; 20% less spoilage; 45% saving in training costs . . . also higher production, and better satisfied employees.

No plant can afford workers with **UNHAPPY EYES**. Mail the coupon for details.

Keystone View Co., Meadville, Pa. Send booklet telling WHAT PLANTS HAVE ACCOMPLISHED WITH VISION SCREENING.

(Name) .....

(Company) ..... (City) .....

## “Paper Work” in the Medical Program

One of the more exacting, and less interesting, phases of industrial medicine is the keeping of records. Without them, medical and health service would be seriously handicapped.

Inadequate or inaccurate records are almost as useless as none at all. Poor records indicate a poorly managed department.

The nurse should be qualified to draw up a record from which will suit the needs of the company. Any form decided upon may require revision from time to time to permit addition of new items and deletion of others as dictated by experience and changing circumstances.

Some plants require preplacement and periodic health examinations. Data pertaining to this phase of work would properly be classified as a part of medical records. They would include also occupational diseases and periodical or checkup examinations; and cover all instances where the employee seeks advice or treatment from the plant dispensary for non-disabling ailments of a medical nature.

Minimal requirements for medical records, as submitted by a committee of the American Association of Industrial Physicians and Surgeons, are:

### MEDICAL RECORDS

1. Personal Items (Employment Data)



- a. Name and Address
  - b. Age
  - c. Shop number
  - d. Sex
  - e. Race
  - f. Marital status
2. Plant Items (Occupational Data)
    - a. Department
    - b. Occupation
    - c. Previous occupation
    - d. Length of employment
  3. Scientific Items
    - a. Date of examination
    - b. Physical examination classification

Some plants clear all employees returning from absences due to physical reasons through the medical department. Such cases require the following additional data:

- c. Date of onset of symptoms
- d. Date of disability
- e. Diagnosis as rendered by attending physician
- f. Name and address of attending physician
- g. Date of return to work

Some plants require certification as to fitness for return to work from

the attending physician or by the plant physician. This may entail physical examination, the findings of which and conclusions drawn being duly noted at such time on this form:

4. Economic Items
  - a. Amount of time lost
  - b. Amount of equivalent wages lost
  - c. Cost of physician, drug and hospital expense
  - d. Amount of compensation paid
  - e. End results

#### ACCIDENT RECORDS

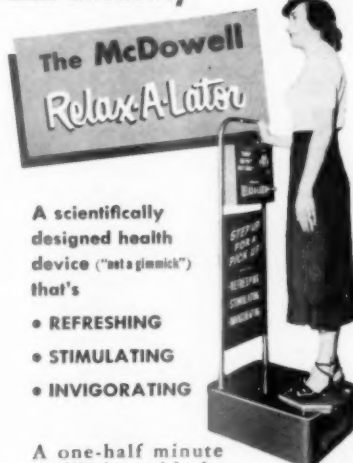
1. Personal Items
  - a. Name and Address
  - b. Age
  - c. Shop number
  - d. Sex
  - e. Race
  - f. Marital status
2. Plant Items
  - a. Department
  - b. Foreman's name
  - c. Occupation
  - d. How long employed
  - e. Physical examination classification
  - f. Were guards provided and in place—could they be used
  - g. Cause—mechanical or non-mechanical
3. Scientific Items
  - a. Part of body injured
  - b. Nature and extent of injury
  - c. Treatment
4. Economic Items
  - a. Amount of production time lost
  - b. Amount of wages lost
  - c. Cost of physician, drug and hospital expense
  - d. End results

The record cards for the various classifications are all very similar with, in some instances, items added to cover the peculiar needs of different ones. Much confusion will be avoided if the various forms are printed on cards of different color. Thus, an employee's folder might contain cards of an *orange* color for his pre-employment and periodical checkup examinations, and these cards could show his visits to the dispensary for treatment of non-disabling complaints, with notation as to date, complaint, diagnosis, treatment given, etc.

A *blue* card bearing the required items might be used to cover his absences from work for non-industrial physical reasons.

A *yellow* card would cover any industrial or occupational disease

## A New Way To Increase Employee Safety and Efficiency




A scientifically designed health device ("not a gimmick") that's

- REFRESHING
- STIMULATING
- INVIGORATING

A one-half minute oscillation with the McDowell Relax-A-Lator provides an invigorating pickup for everyone—particularly those suffering from fatigue or tired feet and legs. The result: increased efficiency, more production, fewer accidents.

Write for details

**MCDOWELL MANUFACTURING CO.**  
PITTSBURGH 9, PENNSYLVANIA



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*Yes, YOU CAN GET THE*  
**UTMOST PROTECTION AGAINST**

## POISON IVY

*with*  
**PROFESSIONALLY ACCEPTED and MEDICALLY PROVEN**

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USED BY THE MOST OUTSTANDING COMPANIES!

WRITE TODAY  
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**D. R. S. LABORATORIES**  
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WORCESTER 2, MASSACHUSETTS

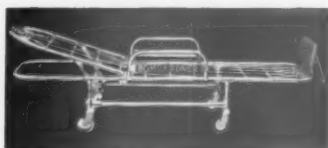


## New stretcher simplifies removal of injured from high locations

Here's another use for the versatile new Haggard's all-purpose stretcher kit. No matter what type of stretcher you now have, you have need for the new Haggard. It does all the things any stretcher can do, plus many more. It is a complete unit ready for instant use anywhere. It is so compact that it fits into a car trunk. Lightweight, only 28½ pounds complete with case, blanket, first aid supplies, and accessories. It's such a totally new concept in utility, versatility and practicality that you should investigate it at once. See how easy it is to store, transport, and put to use. See all the advanced, needed features that make it a combination litter, fracture board, traction splint, and resuscitator. Compact, convenient, complete. Ask your MSCO distributor for a demonstration or write Medical Supply Company, Rockford, Illinois. In Canada, Safety Supply Company, Toronto 2.



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that might develop, whether disabling or non-disabling.

A white card would list all accidental injuries reported and treated, both disabling and non-disabling.

The employee's folder would now contain a complete health record easily separable under the several important categories.

Let us suppose that the nurse has such a set of records carefully kept for a year. All sorts of information can be gathered and statistics compiled. For example, simply by noting the ages of accident cases, the doctor, safety director, or nurse can quickly tell whether it's the older people who get hurt most often.

By running through them for departments, it becomes easy to indicate the plant region wherein most of the accidents occur. This may point the way for the plant safety engineer to see what can be done to improve or remedy the situation.

In the scientific category, many interesting facts could be brought out. The number and severity of infections might be a point of justifiable pride, or might indicate some flaw in technique of treatment.

The number of fractures and their periods of disability and the number of treatments for complete healing of lacerations could readily be studied. In short, every kind of study could be made and lessons learned from them.

The need for accuracy and clarity in keeping records can scarcely be overemphasized. The nurse should get the patient's name and address as accurately as possible, for the address she records is likely to be the most recent and reliable.

On this point, a man may receive what appears to be a trivial injury and receive treatment in the dispensary. The next day he may not appear for work. It may be important to learn whether his absence is the result of his injury. A correct address facilitates such investigation.

### **Strains and Sprains** **Need Prompt Treatment**

A fracture is one type of injury treated with respect. Unfortunately, there is a tendency to regard any injury in which no bones are broken as something trivial—although the patient may not think so.

Neglect of sprain or strain of muscles and ligaments will aggravate and prolong pain and disability. There are two important reasons why a lame back, wrist, ankle or any painful joint or extremity should be

examined and treated without delay, however mild it may seem.

First, the safest course of treatment should be instituted.

Second, it may be more than a strain—a fracture, a slowly developing chronic infection, a disease of the joints, or a sign of trouble at some distant joint.

It is a fact that injuries in which the skin is not broken are more easily disregarded, if apparently mild, than those in which wounds are present. There is a great temptation to "work off" a sore back or knee. But just as important as in the case of open wounds, rest of the strained part is essential until pain or soreness is no longer present.

A sprain or strain is actually a wound, a wound or tear of the muscles or ligament involved, although usually not all the way across the ligament or muscle. This tear must heal solidly before pain will disappear and strength return.

A policyholder said enviously, "I see you're driving a new car."

"Yes," replied the insurance salesman, "I tried to sell an insurance policy to an automobile salesman."

### **PLANT PROTECTION**

goes beyond structural, mechanical and apparel preventatives.

Are your employees physically fit to handle your expensive equipment? Are they suffering from a "hang-over" or other hidden ailments?

The simple provable way to determine the extent to which alcohol is responsible for a person's impairment of function is

#### **THE BREATHALYZER**



The Breathalyzer designed by Lt. R. F. Borkenstein, a leading authority in Chemical Breath Testing.

It protects the light drinker and convicts the guilty. Checks feigned illness, reduces accident possibility.

Write now for pamphlet 5-203



## SAFETY PROMOTION and TRAINING



## IN THIS SECTION

**Training and Maintaining Interest . . . . . 301**

**Signs for Instruction, Direction and Warning 303**

**How to Plan Effective Meetings . . . . . 307**

**T**EACHING safe methods of work and developing the right attitudes toward the safety program require a variety of techniques. In their development much has been learned from the fields of advertising and salesmanship.

"Communication," to use the modern term for getting ideas across to people, uses a variety of media. Oldest of these is the bulletin board which is in universal use throughout industry. Employee publications of many types are carrying safety messages continually.

Color photography, both for slidefilms and movies, has become a widely used and effective medium. A narrator, either in person or on a recording, can amplify the message of the pictures.

Through several agencies sound slidefilms and motion pictures (black and white or color, silent or talking) can be obtained on a rental, loan, or purchase basis.

Many safety programs make effective use of awards and prizes for outstanding safety performance. Results obtained from these incentives is often far out of proportion to their cost.

# Only one pair of EYES to each of us

*Guard  
them!*



## STONEHOUSE SIGNS

For Accident Prevention



297-A



1017-49



423-D



1301-12



177-9



104-9

SIGHT is a gift to be treasured. Yet carelessness often robs workers of this, their precious possession.

Impress upon your employees the vital importance of protecting their eyes. Wearing goggles is one very good way. Keep telling them—with the right signs, either stock or special worded.

The loss or impairment of hearing is another hazard. Protect your workers' ears from shattering, harmful noises in the plant. A worker who can't hear well is a real accident hazard.

Write for our complete Catalog—64 pages, in full color. It's free.

**Stonehouse**

MANUFACTURERS

SIGNS, inc. • Stonehouse Bldg., 9th at Larimer • Denver 4, Colo.

"Signs Since 1863"



ACCIDENT PREVENTION • steel SIGNS IN STANDARD COLORS AND DESIGNS



# TRAINING and MAINTAINING INTEREST

**TRAINING AIDS** can help the safety program in several ways: they can improve the effectiveness of instruction in safe work methods; they can develop sound attitudes toward accident prevention; they can supplement and strengthen on-the-job training.

Safety is so closely associated with efficient operation that much of the instruction serves a double purpose.

The following aids are used extensively in training programs:

1. Employee manuals
2. Motion pictures and slidefilms
3. Bulletin boards and posters
4. Easels and flipcharts
5. Employee publications
6. Instruction cards

## EMPLOYEE MANUALS

These booklets tell the employee what the company expects of him and what he can expect of the company. Group insurance, medical service, personal service facilities, work and safety rules, and other details of employment are explained. There is a growing tendency to avoid the word "rules" in referring to job practices.

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- Are Your Thoughts Getting Through?; T. R. Nilsen, Oct. 1955.
- Don't Overlook the Flannel Board; L. C. Smith, Sept. 1955.
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- Visual Aids Section; June 1955.
- Take a Camera with You; A. B. Hofstetzer, July 1954.
- Good Medicine for Any Plant; D. H. Tilson; Feb. 1953.
- More Power to Your Words (Photography); Norval Burch, Feb. 1953.
- Color Slides Hold Their Interest; Norman Howlen, July 1952.
- The Education of a Safety Man; Glenn Griffin, Jan. 1952.
- Lines of Communication; Robert Clair, Jan. 1952.

Manuals range from simple mimeographed booklets to elaborate illustrated books. Cartoons give a friendly, informal tone to instruction and make rules seem less forbidding.

## FILMS

Both motion pictures and slidefilms are valuable for training classes and for meetings. Types of films include:

1. Strip films projecting individual frames, with the instructor adding the commentary.
2. Sound slidefilms using a similar strip, with disk or tape-recorded commentary.
3. Separate projection slides with either live voice or recordings.
4. Sound and silent movies.

Slidefilms can often be made from photographs taken on the job with amateur equipment. Modern color photography adds realism and attention value to slides and movies, but black and white pictures are useful for some subjects which do not lend themselves to color.

Movies require more expensive equipment and greater skill in their production but short amateur movies have a place in the program.

Most of the motion pictures, however, will have to be obtained from outside sources and a great variety of films are available on a rental basis. Many are available through the National Safety Council which issues an annual list of available movies and slidefilms.

**Projection Equipment.** Projectors for individual slides, slidefilms and motion pictures with and without sound equipment are available in a wide range of prices. Satisfactory equipment can be obtained at a cost within reach of even the smaller plant.

The overhead projector is a useful tool for instruction. It can be used in a lighted room. The instructor can draw or write with a grease pencil on a piece of acetate or film positive in front of him. He can point to any important phrase or part of a picture. He faces the audience while the image is projected through a lens onto the screen.

Screens are available in a variety of sizes and prices and the size of

the meeting room will govern the choice. A beaded screen is more brilliant over a narrower viewing angle and is suitable for general use. A matte screen is better for shorter rooms where the audience is spread out.

**Photography.** The growth of photography as a hobby has provided much useful material for the safety program in the form of slides, strip films, and movies in black and white and color.

Still cameras range from the subminiature, through the 35 mm., the 2¼ x 2¼ twin lens reflex, and the 4 x 5 in. press camera. Amateur movie cameras are available in 8 and 16 mm. sizes. Under favorable conditions good pictures have been taken with simple, fixed-focus cameras but better lenses and shutters synchronized for flash will increase the usefulness of a camera.

## BULLETIN BOARDS

Bulletin boards in prominent locations are excellent media for official announcements and news as well as for safety information and reminders in the form of posters, charts, photographs and exhibits of protective equipment.

If a company does not have an employee publication the bulletin



A floodlighted jumbo poster at a strategic location is sure to be noticed.



Eight-inch plastic letters on porcelain-enamelled steel panels carry emphatic safety messages. (Wagner Sign Service, Inc.)

board serves some of the functions of a newspaper.

Safety posters are visible evidences of an accident prevention program. Unfortunately, some companies have depended on posters to carry the whole load and neglected such essential activities as guarding and job instruction. If posters are not backed by sincere effort to eliminate hazards, employees will have little respect for the safety program.

The value of posters is emphasized by the efforts of advertisers to acquire billboard space near factory gates. These locations are frequently used for large safety signboards where both employees and the public can get the message. Outdoor boards are made more effective by floodlighting.

Bulletin boards inside the plant should be placed where employees can see them when momentarily at leisure, a favored location being near drinking fountains. They should be centered at eye level, about 63 inches from the floor. The board should be in a well-lighted place, specially lighted if possible.

A convenient size for a bulletin board is 22 in. wide by 30 in. high.

Boards should be attractively painted and glass covered. Green, the traditional safety color, is commonly used but there is no reason why other colors should not be used. One board in a workroom is usually sufficient but in lunch rooms or locker rooms several panels may be used effectively.

Flashing lights attract attention and are sometimes used in nonproducing areas. However, they may be objectionable in work places.

Bulletin board displays need not be limited to safety posters. Any subject of interest to employees and

management may use the boards. In fact, safety posters may have a stronger appeal if displays include other subjects.

One poster alone doesn't do the job. It is the impact of the whole program week after week. Different posters will appeal to different people and to different moods in the same person.

Sometimes a special display may be used to launch a special campaign on some such theme as eye protection or safety shoes.

Notices may inform employees about matters of local interest, such as comparative safety records and reports of accidents and near accidents.

Displays of broken goggles and damaged safety shoes and hard hats are interesting and convincing when accompanied by stories and pictures of the workers involved. But object lessons can become monotonous and it takes ingenuity to find new ways of presenting new approaches to familiar subjects.

Some companies allow poster displays to remain for a week but a better plan is to change it as often as every two days. There is plenty of interesting material available at low cost. Probably every one in the area has seen it several times in two days and a fresh display will attract more attention.

Posters, if carefully handled, can be rotated to three boards. They should be discarded when they show signs of wear. Displays should maintain the high standards expected of advertisements of the company's products.

Posters bring eye-arresting splashes of color and safety messages to the bulletin board. Often the poster displays will catch the new employee's eye on the way to his department. These graphic displays will inform, remind and often amuse, since an occasional light touch has been found effective in getting across serious thoughts.

**Jumbo posters**, 8½ x 11 ft. in size are often placed on boards in conspicuous locations where the employee cannot fail to see them when coming to work or leaving the plant. If they can be seen by the public passing the plant, they will also help to make a favorable impression.

Jumbo posters may be obtained from the National Safety Council on a monthly service basis. Billboards may be decorated with original artwork, perhaps including the plant's score of accident-free days.

## EASELS AND FLIPCHARTS

Easels and flipcharts are helpful in conducting meetings. Example of this type of material are the National Safety Council's *Safetygraphs*, each dealing with a specific topic designed for use by foremen and others in holding meetings with small groups.

Safetygraphs are collections of drawings, cartoons, charts and other illustrations printed on heavy paper and spiral-bound in a folder that opens to form an easel. With the large illustration facing the audience, the instructor discusses the subject, using his own words or reading the suggested talk on the back of the illustration.

## SAFETY INSTRUCTION CARDS

**Cards** 3 x 5 in. covering safe methods of practically every type of industrial operation, as well as seasonal and off-the-job subjects, are issued to employees as part of their job instruction. Often they are placed near the bench or machine to serve as reminders of precautions to be observed on the job.

While the messages on most instruction cards are rather long to serve as posters, some companies make enlarged photostats of the cards and mount them on bulletin boards.

## EMPLOYEE PUBLICATIONS

Employee publications furnish an excellent medium for the safety message. These publications range from simple mimeographed bulletins to elaborately printed and illustrated magazines. Illustrated safety stories are regular features in some publications.

—To page 304



Cartoons—home talent or professional—can be used effectively in posters, employee publications, and slidefilms.

# SIGNS FOR INSTRUCTION, DIRECTION AND WARNING

**SIGNS PERFORM** many functions in many places. At work, in public places, and on the highway they give directions, warn of hazards, announce rules and regulations. Even illiterates can often get the message at a glance.

Signs stand out conspicuously against their surroundings because of shape, color, wording and location. Recognition of these elements in commanding attention has led to the adoption of standards that promote uniformity of design and color for signs that fall into various classifications.

Some signs immediately register their message because of their distinctive shape. Examples are the octagonal stop signs at highway intersections and the cross-buck signs at railroad crossings.

**Color.** According to American Standards Code Z35, Specifications for Accident Prevention Signs, characteristic colors for signs should be:

*Red*—warning of special dangers.

*Yellow*—caution; possible dangers or unsafe practices.

*Green*—safety instructions.

*Black*—directional signs, such as arrows pointing to exits and stairways.

For informational signs any colors except red and yellow may be used.

Commercial signs now available conform to the specifications of the Code. They cover a variety of messages for nearly every industrial situation, and special signs can be made to order. Enameled metal, the most frequently used material, is resistant to rust and corrosion and is easy to keep clean.

**Visibility** of warning signs is a first requisite. Special illumination may be necessary in poorly lighted areas.

Black on white and black on yellow are the most visible combinations. Other combinations are white on black; yellow on white; blue on white; white on blue.

Yellow is the most conspicuous color in daylight; red can be seen most readily by artificial light.

Red is universally accepted to denote danger or fire apparatus. This should always be considered

in choosing color combinations for danger signs. Color's force should not be weakened by indiscriminate use.

Color combinations that contrast with surrounding colors should be used so they will stand out clearly. Use only permanent colors.

**Location** is an important factor, and a warning sign is ineffective if it cannot be seen easily or if it is too far from or too close to the point of danger.

**Wording** of signs should be brief, clear and understandable to persons with limited vocabulary.

Whenever the nature of the hazard may not be evident, the sign should if possible specify the danger, such as "Gasoline Storage."

The shorter the wording the better, but many people resent a brusque order, however impersonal it may be. The best sign will, if it expresses more than a mere stereotyped phrase, like *stop* or *slow*, invite cooperation rather than demand conformity.

**Lettering** should be as large as possible, consistent with balance and legibility. Block letters are generally preferred for signs.

The weight of line in the body of each letter should be about the same as the space between the lines.

Tables of distances at which well proportioned letters can be read by persons of normal vision under good lighting conditions are given in the American Standards Code. This code also offers detailed specifications on construction of standard signs.

**Danger** signs should be restricted to such immediate and serious hazards as high-voltage equipment, toxic and corrosive chemicals, collision hazards, explosives, etc. Employees should be warned of their importance.

**Caution** signs warn employees against potential hazards, such as improper use of elevators, cluttered aisles, and sparks from grinding wheels; or against unsafe practices such as oiling machinery in motion, smoking in forbidden areas, and operating machines without guards.

Workers should be trained to respond to a caution sign as an indication of potential danger requiring care and alertness. The difference between the **danger** sign and **caution** sign is one of degree.

Other general types include safety instruction signs, which designate certain actions or practices, directional signs, and information signs.

**Reflectorized signs** are useful day or night. In darkness they stand out brightly under the beams of a flashlight. They are available in standard designs for warning, direction and locating emergency equipment.

**Maintenance.** Periodic inspection and inventory of signs should be part of the safety program. Signs should receive the same cleaning and maintenance that is given to other equipment. Dirty and disfig-



Reflectorized signs of standard design may be life savers in case of power failure. The beam of a flashlight picks up a sign indicating hazards and emergency equipment.

ured signs are not convincing.

Signs which are no longer needed should be removed. Where hazards have changed, signs more appropriate to present conditions should be substituted.

**Warning tags** come in a variety of stock subjects. They are attached to equipment in emergencies to warn others that men are working on machines, that a valve on a pipe line has been shut because of a leak, etc. They are also used on unsafe equipment which is to be removed from service.

**Decals** are miniature signs which can be attached permanently to machines, walls or other places where a message of warning, caution or brief instruction is needed. They conform to the standard specifications of design and color.

**Signboards** with changeable letters are available in small sizes suitable for departmental use and larger types which may be erected in conspicuous places near the plant entrance where they can be seen by both employees and the public.

These boards may be used for brief safety messages and for recording the plant's record of no-accident days.



## Training

—From page 302

Most publications carry news of employee and company activities but some are strictly safety bulletins for employees, supervisors, and special groups.

### BOOKS, PAMPHLETS AND MAGAZINES

The National Safety Council's *Accident Prevention Manual for Industrial Operations* which heads the bibliography for practically every section in this issue, is an illustrated, cloth-bound volume of more than 800 pages. It contains the essentials of a complete program of accident prevention and occupational hygiene.

Each major section of the *Manual* is available as a separate paper-bound reprint. These 26 pamphlets are intended for wider distribution of specialized material.

Sections of the 1955 edition of the *Manual* are being reprinted in the following booklets:

1. Basics of Safety
2. Safety Organization
3. Safety Committees
4. Removing the Hazard from the Job
5. Human Behavior and Industrial Safety
6. Safety Education
7. Maintaining Employee Interest in Safety
8. Public Relations and Publicity for Safety
9. Accident Records and Injury Rates
10. Accident Investigation, Analysis and Costs
11. Workmen's Compensation Insurance
12. Sources of Help for the Safety Man
13. Industrial Buildings and Plant Layout
14. Plant Construction and Maintenance
15. Boilers
16. Pressure Vessels
17. Refrigerating Equipment
18. Handling and Storage of Materials
19. Hoisting Apparatus and Conveyors
20. Elevators and Plant Railways
21. Power Trucks and Tractors
22. Ropes, Chains and Slings
23. Principles of Guarding
24. Metal Forming and Shearing
25. Machine Tools
26. Woodworking Machinery
27. Guarding in Selected Industries
28. Local Exhaust Systems and Ventilating
29. Welding and Cutting
30. Hand and Portable Power Tools
31. Electrical Hazards
32. Flammable Liquids
33. Fire Prevention
34. Fire Extinguishment and Control
35. Emergency Action Plans
36. Personal Protective Equipment
37. Industrial Sanitation and Personnel Facilities



Enlarged and brought up-to-date, the Third Edition of the National Safety Council's "Accident Prevention Manual for Industrial Operations" is the standard reference work for industrial safety.

38. Medical, Nursing and First-Aid Services
39. Industrial Hygiene
40. Industrial Poisons
41. Table of Chemical Hazards
42. Motorized Equipment
43. Safety Engineering Tables

### MAGAZINES

**NATIONAL SAFETY NEWS** brings each month 100 or more pages on industrial accident prevention, occupational hygiene and fire protection, as well as news about people, products and events in the field.

*Sectional News Letters* deal more specifically with the problems and news related to the industries they serve.

*Accident Facts* presents the annual roundup of accident experience throughout the country, giving summaries, analyses, rates, charts and tables.

*The Safe Worker*, a monthly pocket-sized publication for employees, has a wide circulation throughout industry. Written and illustrated in a gently humorous vein, it covers general safety themes.

For the transportation fields there are similar publications called *The Safe Driver* and *The Safe Railroader*. For construction workers, *The Safe Builder* was recently introduced.

Numerous booklets published by the National Safety Council cover health and off-the-job subjects and are designed specifically for the worker.

*The Industrial Supervisor* each month provides help for the foreman in meeting his safety and training problems, offering articles and fea-



## Wausau Story

It began in Wausau, Wisconsin, 45 years ago... when a group of lumbermen joined to pay the claims of injured sawmill workers. Today the company they started—Employers Mutuals—is doing business "the Wausau Way" in all 48 states.



"Meet John E. McKeen. He's president of New York's Chas. Pfizer & Co., Inc.—makers of chemicals and pharmaceuticals—an Employers Mutuals' policyholder since 1946. Interesting to think that this company, one of the world's leading producers of the new wonder drugs, is also performing a few wonders of its own on the production lines. Pfizer has a record of only 1.44

lost-time accidents per million man-hours worked compared with 4.12 for the industry. Mr. McKeen says: 'Employers Mutuals has a refreshing approach towards plant safety. They do everything possible to help us reduce accidents, and thus contribute to the over-all morale in our plants, improve our efficiency and lower our insurance costs.'"

## There's a bit of Wausau on the sidewalks of New York



as told by JIMMY JEMAL  
Reporter-Photographer,  
New York Daily News

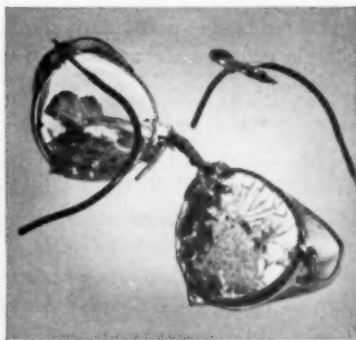
"All I know about Wausau, city of ski hills and industry, good fishing and good people, is what friends have told me—and what I've read in the 'Wausau Story' ads. But I have a very clear impression: Wausau people do what they say they'll do. They have a wonderful sort of straight-forwardness born out of lumbering days and North Woods living.

"I met many interesting examples of this 'Wausau personality' here in New York. People who really take extra care and time to do a job right, like the two Employers Mutuals engineers who, on their own, worked for months to develop a special testing machine. You can read about others here, too."

*Employers Mutuals writes all lines of fire and casualty insurance (including automobile), and is one of the very largest in the field of workmen's compensation. For further information see your nearest representative, or call us in Wisconsin, Wausau 2-1112.*



**How fast do you react to danger?** "This ingenious machine would quickly tell you. It measures visual ability, foot reaction, sensitivity to headlight glare, etc., among the drivers of more than 50 fleets of trucks in the New York area. Such a machine didn't exist until a few years ago when two Employers Mutuals engineers, Harry Beyerman (left) and Charles Ehrhart developed the original model in a home workshop. In order to conduct tests at the ideal time, these two are often up at dawn working at truck terminals."



**Seeing is believing.** "Pop! A shower of molten metal, 1800°F. flew toward his face. But the man working in the die-casting division of a New York plant was saved from blindness because he was wearing these special safety glasses. The lenses stopped the metal. Hundreds of plants have been able to reduce eye injuries thru safety glasses programs, set up with the help and encouragement of Employers Mutuals Accident Prevention people. They really live up to their word—'we'd rather prevent than just pay for an accident.'"

### Employers Mutuals of Wausau



*"Good people to do business with"*



## There is a better way to register safety messages!

"Safety messages that get read" the National Safety Council confirms, "do help reduce accidents." Yet how difficult it is to get them read — particularly the familiar simple cautions we are all so prone to disregard.

### Here's one way to do it

AJAX CUPS put your safety message right in your worker's hand, several times a day, at just the moments when he is relaxed, receptive, ready to read.

At the same time, these crisp, clean AJAX Cups provide the most convenient, comfortable drinking water service, boost worker morale, and reduce the hazards of transmitted infections.

Any bubbler fountain is easily converted to provide this service. Ask your paper merchant about it.



**AJAX® Cups** — one-piece, wedge-shaped, easy to hold and drink from; in 4, 6 and 7 oz. sizes; packed imprinted with assorted stock safety messages at no extra cost or your own message to order.

**AERO® Cups** — for those who prefer a flat-bottom cup; in 3, 4, 5 and 6 oz. sizes. Also with stock safety messages or your own message to order.

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Write us today for this new folder which gives full details about safety-imprinted AJAX and AERO Cups and equipment.



## United States Envelope Company

General Offices: Springfield 2, Massachusetts

15 DIVISIONS FROM COAST TO COAST

tures on technical and human relations subjects, safety talks, how-to-do-it features and the like.

### MISCELLANEOUS PUBLICATIONS

Other publications for foremen include a series of 12 pamphlets on *Safety in Foremanship*, six pamphlets on *Psychology of Safety in Supervision*, and volumes of suggested five-minute talks for the foreman to use "as is" or as the pattern for his own version of each subject.

*Data Sheets* offer concise, authoritative discussions on specific safety subjects. They, like the pamphlets, are furnished separately or as full sets in ring binders.

*Detail Sheets* offer working drawings for construction of temporary structures or safety devices that any workman can follow.

Special releases include *Accident Facts Memos*, *Engineering Studies* and *Safety Reprints* covering a wide range of subjects.

*Safety score charts*, home-made or available in poster services, bolster pride in the plant no-accident record, or remind employees of the accident record.

*Photocopies* are give-away booklets for the workers—to teach safety with pictures. On-the-scene photos make these training aids realistic and convincing.

**The Trade Press.** Periodicals serving the various branches of industry at the management level are carrying an increasing amount of engineering and organization data on various subjects relating to accident prevention and occupational hygiene.

### OTHER SOURCES OF HELP

Valuable assistance in the promotion of safety is being rendered by numerous organizations. These groups and their specialized activities are described in Section 12 of the *Manual* which will be available as a separate pamphlet entitled *Sources of Help for the Safety Man*.

Types of organizations described are:

Standards and Specifications groups, such as the American Society for Testing Materials, American Standards Association, Associated Factory Mutual Insurance Companies, Factory Insurance Association, National Board of Fire Underwriters, National Fire Protection Association, and Underwriters' Laboratories.

Service Organizations—including Industrial Hygiene Foundation and National Society for the Prevention of Blindness.

Federal agencies—U. S. Depart-

ment of Labor, U. S. Public Health Service, Bureau of Mines.

Insurance associations.  
Trade associations.  
Insurance services.  
Professional societies.

### SAFETY INCENTIVES

Recognition for group and individual accomplishments has become firmly established in safety programs, usually in the form of awards and prizes.

For plants and departments, plaques, trophies, and banners are often presented and placed in conspicuous locations.

For individuals, automatic pencils, wallets, key rings, cigaret lighters, and lapel buttons are popular items.

These awards are available in a variety of stock designs. The company name, trademark, or monogram can be incorporated at moderate cost.

### How to Plan Effective Meetings

FOR UTMOST effect in motivating and supplementing instruction, audio-visual aids should be chosen to fit in with the method of instruction to be used, the group to be in-

structed, and the objectives to be achieved.

Audio-visual aids should serve to:

- Formulate correct ideas.
- Create interest.
- Intensify impressions.
- Broaden experience.
- Save learning time.

No matter how good the aid, its effectiveness will be determined largely by the way it is used. Audio-visual aids have the advantage of being easily understood even by poor readers.

It should be remembered that audio-visual aids are not a complete program in themselves. Here are some suggestions for their use:

- The user must know his subject and be thoroughly familiar with the aids.
- The material must be introduced properly. Tell the audience what to expect and its significance.
- Avoid distractions, such as noise, improper focus, etc.
- Don't use too many devices.
- Plan the sequence.
- Try for exact timing and smooth handling.
- Be sure material is pertinent, and clearly displayed.

Audio-visual aids may be rented or purchased. Some may be made to order by an outside agency or within the plant. Home-made aids range in price from a few dollars to several thousand.

Following are some of the aids used.


1. Charts—from 8½ x 11 in. to 30 x 40 in.
2. Models, mock-ups, demonstrations.
3. Flannel boards.
4. Movies.
5. Slidefilms.
6. Recorders—wire and tape, sound-scriber.

*How much did they learn?* After a meeting in which any of the above aids were used, see how much the group has learned. This may be done by oral questions, written tests, or performance tests.

### THE MEETING ROOM

Good ventilation, as well as an interesting program, is needed to keep the audience awake. The room should be large enough to accommodate the audience comfortably and have good acoustics. It should be possible to hear the speaker from the rear row.

**Elkay Safety Signals**  
"The Signs They See"



Elkay Safety Signals meet the demand for a portable, light-weight, sturdy, durable and effective warning safety sign that may be set up or taken down instantly, folding into compact form. Sign snaps off and tripod legs slide along stem closing to a length of 26 inches. Tripod is of ½ inch steel rods with rugged malleable iron castings finished in red enamel. Sign plates are of 22 gauge steel in yellow with black letters. Red flags are 15 x 17 inches. Standard wording on signs:

"Danger," "Men Working,"  
"Men Working Above," Etc.

We manufacture 3 or 4 foot automatic types, drive and barricade type signals, made of the same high quality materials. Prompt delivery.

Write for full information.

**R. B. OVERTON CO.**  
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Creators of the "SPIN-O-GRAM"  
**TERRIFIC** for launching an award program.  
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### SELL SAFETY THRU INCENTIVES

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JUST SEND  
US YOUR  
TRADEMARK.



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America's First INSURANCE GROUP

**JOHN SMITH**

has driven with a genuine regard for the lives and property of others and has had no accidents for one year

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1/55

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AWARDS FOR SAFE DRIVERS



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ILLUSTRATED CASE HISTORIES

**Award Incentives, Inc.**

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## Employee Manuals Are More Than Rule Books

The use of manuals outlining company policies and working conditions has long been a part of employee induction procedure. These booklets may cover general matters dealing with employer-employee relationships, including safety, medical and health service, and related topics. Sometimes a smaller booklet is issued strictly for safety rules or suggestions.

In most companies, stiff, formal lists of rules have been replaced by friendly, helpful explanations of company policies for employee guidance. Whimsical cartoons can make even orders seem less arbitrary.

Putting this information in print in itself conveys the important message that management is interested in accident prevention. It also is a more reliable method of instruction than depending on verbal instructions alone.

Books are not a substitute for personal supervision but it helps the supervisor to have the information in printed form.

Printed rules should be introduced by management endorsement and by brief explanations of why rules are necessary, pointing out how the employee gains by safe work practices.

Text should be worded as simply as possible. Simplicity is achieved

by being accurate, clear and brief.

Rules should be reviewed at intervals to consider the addition of new items brought about by changing conditions and alterations and deletion of those that may no longer be applicable. Sometimes it may be found that new rules are not necessary; rather there may be a need for improvement in supervision or in other media of communication.

Rule books alone cannot be counted upon to have much effect on attitudes or to give much information. However, they are useful aids in a well-planned persistent accident prevention campaign.

It should not be assumed that employees will read the manuals from cover to cover without a little outside stimulation. They can, however, add much to the program if the contents are reviewed briefly when the booklets are presented and informal quizzes are conducted at intervals.

Individual cards covering work practices for specific operations may sometimes be used effectively to supplement the more general material in the manual.

## What to Look for When You Buy

Many of the items used in an industrial plant do not involve any special hazard in their use. The selection may be governed by price, appearance, durability, or any other factor.

However, when the question is studied closely, numerous products have a more important bearing on safety or health than was at first supposed.

For personal protective equipment, careful selection is important. Goggles, hard hats, respirators, safety shoes, garments, etc., are bought first of all for protection. Some of these items are covered by ASA standards, by approval labels of the U. S. Bureau of Mines and independent laboratories, and other certification. In this field, there are many companies who have been in business for many years and their products have unquestioned reputation.

The factor of safety is also important in the selection of all equipment for the movement of suspended loads, such as rope, chain, and slings. In equipment for the movement and storage of materials, operating efficiency and economy are often the compelling reasons for buying but the effect on accident hazards is scarcely less important.

Miscellaneous substances and fluids used for cleaning may consti-

# Safety and Special Purpose

## Plain or Reflectorized

# SIGNS for EVERY NEED!

SAFETY FIRST—BE CAREFUL

NOTICE THESE DOORS MUST BE KEPT CLOSED

HELP UP THE FUEL CLEAN

THINK ACCIDENTS ARE AVOIDABLE. FORGET THE ALIBI.

BE CAREFUL SAVE A LIFE IT MAY BE YOUR OWN

EXIT

DANGER NO SMOKING

WARNING CURRENT—ON—

CAUTION KEEP AISLES CLEAR

NO PARKING AT ANY TIME

EXPLOSIVES

SLOW

STOP

MEN WORKING

SHELTER AREA S INSIDE

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tute or aggravate a fire or health hazard. Most of these substances which have been in use for some time have been rated according to hazards involved in their use.

Unsuspected hazards may lie in the use of ordinary items, such as the commonest types of hand tools, tool racks, cleaning rags, and types of paint used for industrial interiors and machines.

Specifications will consider, among other things:

Long life without deterioration.

Maximum load strength.

Hazard to the worker's health.

Minimum fatigue in use.

Absence of rough, sharp, or pointed characteristics in objects that must be handled.

Ease and economy of maintenance.

### Auto Seat Belts Win Wide Acceptance

More and more automobiles, both company owned and private, are being equipped with seat belts. Most new cars are being offered with seat belts as optional equipment.

A National Safety Council policy statement, adopted October 16, 1955, recommends the use of seat belts in motor vehicles, recognizing that belts will not prevent accidents but that they may reduce the severity of injuries in certain types of crashes.

The Society of Automotive Engineers has published a "Recommended Practice for Motor Vehicle Seat Belt Assemblies," providing some standards.

California and Michigan have enacted laws requiring that seat belts sold and used be of a type approved by state authorities.

These developments point toward growing acceptance of seat belts as aids to safety. Research work is continuing, and before long there may be more facts available about the effectiveness of belts in reducing injuries.

Many vehicle owners are installing belts in their own cars. Prospective belt purchasers would do well to look for products certified by the manufacturer as meeting all necessary requirements of the Society of Automotive Engineers.

The SAE "Recommended Practice" does not cover belt installation. Because of the many makes and models of vehicles on the road, and because of the varying condition of these vehicles, it is impossible to provide specific instructions for mounting belts. Obviously, the installation method must be good

enough to be at least as strong as the belt and its fittings.

This means in most cases that the ends of the belt must be fastened to the frame of the vehicle or to the floor pan. In no case should they be fastened to the seat, unless the seat itself is adequately fastened to the frame. If the belt is fastened to the floor pan, this should probably be done with flat washers two to three inches in diameter used to reinforce the floor pan under the nut.

Information on accidents in which safety belts were present is being collected. It would not be of any

particular value to know merely that a vehicle involved in an accident had been equipped with belts without knowing whether or not they were used. Also needed is information on injuries, and what injuries occurred in the accident to people not restrained by belts.

A special report on seat belt accidents is being collected by the Cornell University Medical College Crash Injury Project in all such accidents which come within its reporting areas. This should give additional useful data on seat belts and their effect on injuries.

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SOUND SLIDEFILM  
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THE FILM IN COMPLETE  
SYNCHRONIZATION WITH  
THE RECORD . . . and **MANUAL:**

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AN AUDIBLE SIGNAL ON THE RECORD.

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STATE \_\_\_\_\_

## Fatigue Is a Factor In Accidents

The tired worker has been one of industry's problems for years and much progress has been made in reducing those causes arising out of employment. Long recognized as a destroyer of plant efficiency, fatigue is a factor that lurks behind many accidents.

The worker today is supplied with greatly improved equipment as compared with his predecessors. He uses much less muscular effort. Yet in

spite of this he gets tired. This fatigue is more often due to psychological, physiological, and environmental factors than to physical exertion.

Studies have shown that accidents increased as the work day was extended beyond eight hours. While production schedules call for overtime, extra precautions should be taken.

Suggestions for reduction of fatigue include:

1. The work assignment should match the physical and mental abili-

ties of the worker and he should be selectively placed at the proper job.

2. The job should be engineered to produce maximum efficiency by attention to such factors as illumination, ventilation, posture, awkward movements, accident and health hazards, noise and general plant orderliness.

3. The supervisor should attempt to reduce any possibility of friction between employees or between himself and the employees. He should make them feel that their job is important to the organization.

4. Speed-up of production lines should only be undertaken after full consideration has been given to possible cumulative effects of the increased activity demand.

5. Work weeks in excess of 48 hours or a six-day a week basis should be avoided wherever possible.

6. For monotonous and repetitive work a five-minute rest period in each work hour should be allowed. For less intensive work a 10 or 15 minute rest period in the middle of the first and last halves of each shift should prove beneficial. At these times it helps to provide facilities for snacks or hot drinks.

7. Some companies feel that shifts should be rotated infrequently, every two or three months rather than every week or two.

8. Education programs should be planned to teach rules for good posture, hygiene, nutrition, recreation and relaxation.

## In Snake-Infested Regions Be Prepared

Snakebite, fortunately, is not one of the more common causes of injury or death in the U. S. A. It would probably rank far behind protruding nails or slippery floors.

But if job or vacation takes you to a snake area, don't rely on statistics. Wear high boots or leggings and carry one of those compact convenient snake-bite kits. And memorize the directions for its use. The 100-proof cure is not recognized in medical circles.

Some people actually like snakes. Most people, however, have a strong aversion to them and an impulse to kill even the little harmless ones.

Snakes have been known to go out of their way to attack humans, but

# Prevent Accidents with

# Ready Made

## SIGNS for SAFETY



**CAUTION**  
WEAR  
GOGGLES  
When  
Grinding

**NOTICE**  
KEEP  
DOOR  
CLOSED

**METAL SIGNS**

- Baked Paint Finish
- Porcelain Enamel Finish

**DANGER**  
HIGH  
VOLTAGE

**CAUTION**  
KEEPAISLES  
CLEAR

**NOTICE**  
DON'T THROW  
MATCHES  
CIGARS OR  
CIGARETTES

**FX**

**THINK**  
ACCIDENTS  
ARE  
AVOIDABLE

**WARNING**  
LIVE WIRE

**CAUTION**  
NO SMOKING  
BEYOND THIS  
POINT —

**+** HOSPITAL

**FIRE**  
HOSE

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24 hours a day . . . 3 shifts . . . **READY MADE** Accident Prevention Signs are on the job; right where they're needed most — alongside your worker at the production line . . . in the chemical lab . . . on the scaffold . . . **READY MADE** Signs are the silent guardians that thwart accidents . . . that eliminate injuries and costly work stoppages.

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ordinarily a snake, either poisonous or non-poisonous, will crawl out of the way if given a chance. Any snake will fight if cornered.

Most of the snakes one is likely to encounter are non-poisonous. Popular misconception to the contrary, there are only four poisonous snakes which are native to the United States. Three of them are found only in certain sections of the country. Only one is native to all sections.

Rarest of the poisonous snakes is the coral snake. It is semi-tropical and found mostly in Florida, in the states bordering the gulf, and in desert areas of the southwest. Its venom is the most deadly of any carried by North American snakes. A burrowing snake of nocturnal habits, it is not often seen.

The coral snake is a small, rod-like snake of moderate length. Its seemingly headless body is banded above, below and all the way around by alternate bands of brilliant black and red, separated by narrower bands of yellow. The snout is black.

Akin to the cobra and mamba, the coral snake does not have fangs. Its teeth are grooved and the venom flows into the wound by means of the grooves. A bite looks like a semicircular series of pinpricks. The quick-acting venom attacks the victim's nervous system.

The other poisonous snakes are the cotton-mouth moccasin, the copperhead and the rattler. These three are closely akin and are members of the viper family. They are called "pit" vipers because of the pit or indentation between the nostril and the eye. Their venom is slow-acting. Its full effect may not show up until several days after the bite. The venom attacks the victim's blood. It is injected through the two hollow fangs that characterize this family of snakes.

Except for some types of rattlers which become six feet long, pit vipers tend to have short, thick bodies with stubby tails. Their heads are blunt and shaped somewhat like an arrowhead and their necks are pronounced, as contrasted with the slimmer bodies, less pronounced necks and long, slim tails of the non-venomous snakes.

The cottonmouth or water moccasin stays close to the streams, marshes and swamps of the Southern states. When surprised, it coils, draws its head back and opens its mouth wide, showing the white mouth parts, hence its name "cottonmouth."

The copperhead is an upland snake. Its favorite habitat is the

rocky cliffs that border the streams of the Appalachian mountains. It takes its name from the distinctive coppery color of the top of its head. It is a sluggish snake, and often allows its victim to walk within striking range before it moves.

Some type of rattlesnake is found in every section of the United States. There are a number of varieties of this snake from the small prairie rattler to the six foot diamondback. It usually, but not always, gives ample warning before striking. Don't count on it.

## Hard Hats Plus Turbans

Racial and religious customs are seldom problems in getting men to wear protective clothing in the western world. But in Eastern countries tradition must be respected.

In India, for example, Sikhs are required by their religion to wear turbans, which proved to be a real problem on jobs requiring hard hats. The problem was solved on one job by removing the linings from the hats, with the turbans providing the cushioning. Chin straps kept the hats in place.

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for falling  
objects  
near  
excavation work

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# ACCIDENT CAUSES

## I. FAULTY ENVIRONMENT

### 1. Hazardous Arrangement

- Unsafe piling and storage
- Congested working space
- Inadequate aisles, exits
- Unsafe processes
- Overloading
- No safe access to remote or high places

### 2. Unsafe Material and Equipment

- Rough and sharp-edged materials
- Inherently slippery surfaces
- Poorly designed and constructed equipment
- Low-strength materials—floors, hoisting equipment, etc.
- Weakening of parts by rust, corrosion and decay

### 3. Illumination

- Insufficient light
- Glare
- Unsuitable location of light sources

### 4. Ventilation

- Insufficient air change
- Impure air source
- Contamination by processes
- Excessive heat

### 5. Moving Machinery

- Unguarded
- Inadequately guarded

## II. THE HUMAN ELEMENT

### 1. Physical and Mental Characteristics

- Poor eyesight
- Defective hearing
- Muscular weakness
- Slow mental reaction
- Lack of coordination
- Heart, circulatory or other organic weakness
- Lack of nervous and emotional stability

### 2. Knowledge and Skill

- Ignorance of correct methods
- Faulty work habits
- Insufficient experience

### 3. Attitudes

- Indifference
- Inattention
- Indolence
- Arrogance
- Recklessness
- Hostility

## ACCIDENT CAUSES ARE FOUND BY

1. Investigation of accidents
2. Study of plant accident experience
3. Studying experience and methods of other plants
4. Plant inspections
5. Suggestion systems
6. Job analysis



"I miss you"  
"Good to hear your voice"

"Welcome Home"

"Happy Birthday"

"See you this evening"



These simple, friendly words are said many, many times over the telephone each day.

It is just such simple, friendly words from one person to another that make the telephone such an important part of our lives.

Surely it is indispensable in emergencies. But its greater value may be in carrying friendship and love and happiness across the miles.

For without the telephone, time and space would rush between us. And many of us would be so much alone.

BELL TELEPHONE SYSTEM



## Inescapable Noise

No quick solution has yet been found for one of the knottiest problems of the jet age—noise. It is a problem felt in varying degrees throughout civilization.

Aircraft companies are working on jet mufflers in the hope of making jet transports no more noisy than conventional planes. But as military jet engines develop more thrust they will cause even more noise.

"We ain't heard nothing yet," General Nathan F. Twining, Air Force Chief, told the recent Air

Force Association's jet age conference, as reported by Time Magazine.

To alleviate the noise nuisance he said that the Air Force is trying to locate new jet bases at least 15 miles from established communities. However, bases, aircraft plants, and municipal airports quickly attract houses, stores and filling stations and soon find themselves in the middle of fast growing communities.

On its jet bases, the Air Force has put up sound barriers to muffle the whine and roar of pre-flight run-

ups, but airborne noise is harder to control. Said General Twining:

"The big job is to get our nation to recognize jet noise as a largely unavoidable consequence of progress. It will be handled partially by our noise-suppressing measures. The end answer is acceptance. We have learned to live with the stench, noise, expense, death and destruction of the automobile.

"Noise is just something we are going to have to live with."

## KEEP SAFETY OUT IN FRONT

### GET DAV-SON "TELL-ALL" PLANT SAFETY BOARDS

Dav-Son Bulletin Boards are especially designed to get the maximum attention for your messages. Dav-Son equipped plants everywhere are maintaining enviable safety records. Write for circular describing the many styles available.



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## Compressed Air Is Useful—and Deadly

Compressed air, properly used, is an important tool for production. Misuse can result in serious, even fatal, injuries.

Compressed air should not be used for cleaning work areas. In addition to spreading dust and chips over a wide area, flying particles may endanger persons nearby.

Air hose should never be used to blow dirt off clothes, hair, etc. Foreign bodies may become embedded in the skin, or serious eye or ear injuries might result from these practices.

Before the air line is opened, check to be sure that the fittings are all properly connected. Be sure the trigger mechanism on the tool and the control valve on the hose are in a closed position to prevent the tool or air line from whipping about when the air is turned on.

When necessary to change tools, the air should be turned off at the source. Never kink the hose for this purpose.

Compressed air should never be used for practical jokes. Just a little blast of air may rob someone of his vision or hearing. Application of the air hose to the body is especially dangerous and can end fatally.

## Greater Chicago Conference To Be Held in Peoria

For the first time in its history, the Annual Safety and Fire Protection Conference sponsored by the Greater Chicago Safety Council and cooperating agencies will be held outside the Chicago area.

This year's conference, the 33rd, will be held in Peoria, Ill., June 6-8. Originally, plans were made to hold the conference at the Sherman Hotel, Chicago, May 22-24, but the Council was informed that the Midwest Regional Meeting of the President's Conference on Highway Safety had been scheduled to meet on the same days and at the same hotel.

It was therefore decided to hold the conference in Peoria, which has the required accommodations and is centrally located for most of the delegates.

The annual meeting and award presentation dinner of the Greater Chicago Safety Council will be held in Chicago during May.

### Dental Health

Industrial dentistry is concerned with the dental welfare of the employee while in the plant. Dental injuries incurred on the job are definitely the employer's responsibility. Emergency service is also desirable.

How much dental service a company should give a worker is debatable. Relatively few companies employ dentists on either a full-time or part-time basis.

In communities where dental facilities are available, emergency service for toothache and injuries on the job, plus diagnostic and educational services, make a well-rounded dental program in industry.

Some companies offer a full mouth x-ray once a year and dental cleansing twice a year. Along with this service is carried an intensive educational program. Very few companies offer restorative dentistry. Such a program, it is felt, does not conflict with the interests of the dentist in private practice. In fact, it has made employees increasingly conscious of the need for dental care with increased work for private practitioners.

### A Safety Reminder with Every Mouthful

Paper cups and other disposable utensils are now carrying safety slogans and other reminders to patrons of many company cafeterias and canteens and industrial caterers.

### Responsibility

Most people don't really welcome responsibility, so management is always on the lookout for employees who are eager to take on new duties and are willing to make decisions.

Accepting responsibility implies the ability to follow through on assignments without bothering the boss with minor details.

Ask questions when you must, but first decide whether they are really necessary.

*Alexander M. Lewyt, President,  
Lewyt Vacuum Cleaner Corp.*

These containers are available from most manufacturers and distributors.

The "Green Cross for Safety" emblem, which has high attention value, is frequently used.

Paper napkins imprinted with safety messages are another medium.

For customer distribution paper bags, wrapping paper, and pressure-sensitive tape may also carry slogans and reminders.

### How Does the Plant Look?

Appearance of the plant—both inside and out—is important. Employee and community relations are

helped by the looks of a factory, and customers often judge the product by the plant. The housekeeping program should include the entire property.

Landscaping should be planned for economical maintenance. With power mowers and sweepers a small force can take care of a large lawn if it is not broken up by shrubbery and flower beds. Trees are an asset to both company and community.

Decorative floodlighting is employed by many companies with distinctive buildings and well-kept grounds.

## Pointing the Way to More Effective Safety Promotion



Regularly changed messages on a Wagner Endur-ename<sup>®</sup> Board are the answer to more effective safety selling. Shown is an installation for Sealed Power Corporation, Muskegon, Michigan, which includes 30-foot panels on each side of an overpass.

The coupon will bring you a new catalog which will illustrate how many industries are using this new device.

\*REG.

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## Carol Lane Award Rules Announced

Are women backseat drivers?

Here is an invitation for them to sit up front and toot their own horn.

The National Safety Council has announced that nominations are sought for the 1956 Carol Lane Awards for Traffic Safety, administered by the Council through grant of the Shell Oil Company.

The awards, which recognize the achievements of women in the field of traffic accident prevention, are open to American women and to women's and parents' groups. Now in the fifth year, they have revealed the important traffic safety support work being carried out by women, according to the Council.

The awards are named for Carol Lane, women's travel director of Shell. The first three winners in both the individual and club categories will receive a bronze sculpture and \$1,000, \$500 and \$250 savings bonds, as well as trips to Chicago for the National Safety Congress in October.

1. Entries are to be submitted on the official entry blank.

2. If an entry is submitted for an individual by an organization, or individual other than the entrant, the entrant's signature must also appear on the entry blank.

3. If a club is entered by another organization, the president of the club that is nominated must also sign the entry blank.

4. The entry blank is to be filled out in its entirety, and additional information and supporting evidence (newspaper clippings, letters, etc.) must be attached.

5. The program must be concerned with a traffic safety project that has reached maturity during the period between June 15, 1955, and June 15, 1956, although it is not necessary that the project be completed within this time. Evidence of the program's effectiveness during this period is required. The prime consideration in judging every entry will be the over-all quality.

6. Deadline for all entries will be midnight of June 15, 1956.

Entries should be mailed to (or additional information may be obtained from) Miss Alice Catherine Mills, director of Women's Activities, National Safety Council, 425 North Michigan Ave., Chicago 11.



## Self-Sticking Safety Signs

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## SAFETY FILMS

For further information on publications or films listed here, write Nancy Lou Blitzen, Film Consultant, Membership Service Bureau, National Safety Council

The National Safety Council announces the release of three new safety films available for immediate (purchase) delivery.

### New Employees

One, entitled *So You're New Around Here!*, deals with the indoctrination of new employees. Although designed for showing to new workers, the film would be of great interest to foremen and supervisors as it gives many of the necessary points of information that should be taught to the new employee.

The film is directed to the new employee, who is slightly bewildered over all the sudden information thrown at him the first day on the job. It tells him what to expect regarding introductions, instructions and procedures that safety-minded personnel will give him. It points out how the company arrived at its safety rules and why it is necessary to follow them strictly and exactly.

The film also answers the questions he may have about what will be expected of him on the job and tells him how to acquire knowledge of company rules and procedures so he can soon become part of the working organization, rather than remain an outsider.

Items such as wearing safe clothing and using protective equipment, asking questions when something comes up that he doesn't understand, and following the rules of safety set down in the company rules book are

all covered. Indirectly, the film shows the foreman and supervisor what should be told to the new employee and how he can be helped and directed into being a safe and valuable worker.

The film is available in either 16-mm sound motion or 35mm sound slidefilm version. It is black and white and runs 13½ minutes. It is available for purchase or rental.

The next two films available cover office and vacation safety.



A scene from the Council's new film, "Down at the Office." A cigarette butt has just caused a bad fall.

### Falls in the Office

The office film is entitled *Down at the Office* and the title implies the film's subject—slips and falls. Although these are not the only hazards encountered in an office, they are certainly major ones.

In brief, the story deals with a secretary who believes herself to be safe in an office, compared to the danger she faces when crossing streets. Her boss sets her straight by describing some bad accidents that occur in their office—all caused by falls.

Such things as paper clips, matches and cigarette butts on the floor have caused serious injuries, and the floors themselves, he says, can be



Another new Council film, "Vacation Safety," cautions: "Don't overdo sports."

treacherous if they are slippery and care isn't taken when walking on them.

The old problem of "heel caught in skirt hem" is graphically illustrated. Leaving drawers open to trip over and pushing a chair back when rising and sitting down again (on air) are covered. Her boss makes the point that a broken back from a fall is just as painful as one from an automobile accident, and can be just as fatal.

The film concludes with the warning that fall hazards exist in most offices and must be eliminated, and watched for as carefully as watching for cars when crossing the street.

### No Time to Relax

*Vacation Safety* is directed to the head of the house and points out that although a vacation is for relaxation and pleasure, it is no time to relax on safety.

When taking a family on a vacation, the father takes on a five-fold occupation: He is a recreation director (makes sure games are played safely and no one overdoes it); a lifeguard (when the family goes swimming); a small boat expert (when taking the family rowing or canoeing); a forest ranger and fire watcher (when on a picnic in the woods); and a first-aid expert (when someone gets hurt in spite of precautions).

Even when the day is finished, there is still one more occupation—a safe driver so that the end of a perfect day doesn't become the last day.

The last two films are both 16mm sound motion pictures in black and white. They run 10 minutes each and are available for purchase and rental.



"Put on your safety goggles and let's go meet your new boss!" From NSC's new film, "So You're New Around Here."

## For a More Successful Poster Program



JUMBO POSTER for MAY 1956

The Jumbo poster, issued monthly, is designed for outdoor use and is available to members on annual subscription but is not stocked. Its actual size is 9' 11" by 11' 8".

### SAFETY BANNER FOR MAY, 1956

Here is the attention-getting, monthly cloth banner. Available in two types—indoor and outdoor—both are identical in size (10 feet long by 40 inches high), have the same general message and multi-color design. Indoor type is of sturdy drill with grommets for easy hanging, while the outdoor banner is of extra heavy drill, with wind vents, and has strong stitched-in rope for durability.



don't let an **ACCIDENT**  
tag you **OUT**

NATIONAL SAFETY COUNCIL

**P**OSTER program aids miniaturized on this and the following pages are **NEW**—shown here for the first time. Those illustrated in one color are actually printed in two or more colors.

For maximum variety, refer to the 1956 Directory of Occupational Safety Posters. There you'll find 756 top-notch selections on a great variety of subjects.

Copies of the Directory are available at 50 cents each—write Membership Service, N.S.C.



NATIONAL SAFETY COUNCIL

0646-A

8 1/2 x 11 1/2

This new four color poster is illustrative of the 72 four color posters shown in the 1956 Poster Directory.

Electrotype of poster miniatures on this page are not available, nor can payroll inserts be supplied.



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0732-C

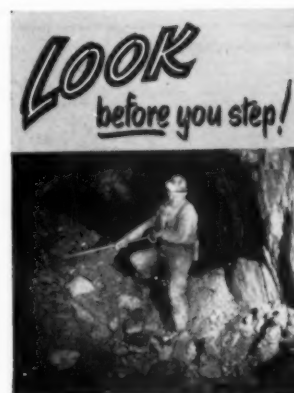
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- † RUN ON STAIRWAYS
- † USE MAKESHIFT LADDERS
- † LEAVE TOOLS ON FLOOR
- † IGNORE OIL SPILLS

0484-A

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0721-A

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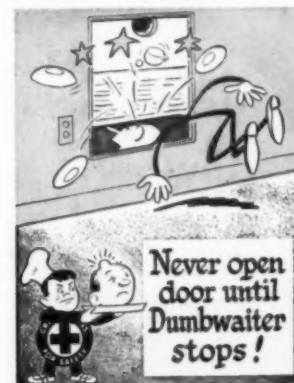
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0704-B

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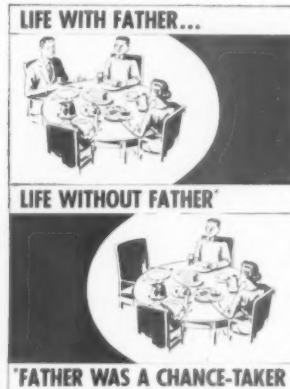
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0643-A

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0665-B

17x23



T-0671-C

25x38

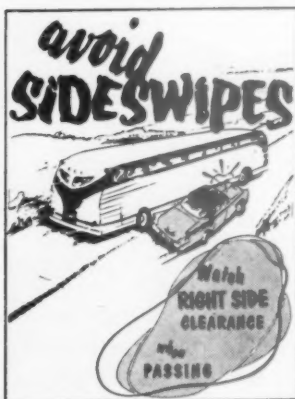
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V-0699-A

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V-0698-A

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# directory of safety equipment sources

—A—

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Steeleville, Ill.

**Ace Protection Equip. Co.** ..... 145  
1209 Kalamazoo, South Haven, Mich.

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Brenton Equipment Co., 374 Brannan St., San Francisco, Calif.

Guardian Safety Equipment Co., 7223 S. Main St., Los Angeles, Calif.

Guardian Safety Equipment Co., 427 1/2 Moreland Ave., Atlanta, Ga.

Gaspco Ltd., P.O. Box 2454, Honolulu, T.H.

Universal Safety Equipment Co., 5115 W. Diversey Ave., Chicago, Ill.

Williams & Co. Inc., 1109 S. Preston St., Lexington, Ky.

General Equipment Corp., 261 Franklin St., Boston, Mass.

Equipes de Seguridad, S.A. Sullivan No. 95, Mexico, D.F., Mex.

Averill Equipment Co., 19225 Conant Ave., Detroit, Mich.

Continental Safety Equipment Inc., 1551 Selby Ave., St. Paul, Minn.

Safety Incorporated, 17 1/2 E. 31st St., Kansas City, Mo.

Safety Incorporated, 2608 Olive St., St. Louis, Mo.

Andersen Fire Equipment Co., 2421 Farnam St., Omaha, Neb.

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New Jersey Safety Equipment Co., 299 Park Ave., East Orange, N.J.

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Richmond Tire & Rubber Co. Inc., 7th & Leigh St., Richmond, Va.

Safety & Supply Co., 115 Blanchard St., Seattle, Wash.

Spokane Safety Appliance Co., N. 219 Division St., Spokane, Wash.

Boil Electrical & Safety Equipment Co., 11 Watkinson Ave., Toronto, Ont., Can.

Butler Optical Co. Ltd., 1520 Mountain St., Montreal, Can.

Fleck Bros. Ltd., 110 Alexander St., Vancouver, B.C., Can.

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11 E. Kinzie St., Chicago, Illinois

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901 W. Lafayette Blvd., Detroit 26, Mich.

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**American Industrial Safety Equip. Co.** ..... 145

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**American Institute of Physics** ..... 104

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Hendry, C. J. Co., 111 S. Front St., San Pedro, Calif.

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Bronze Specialties, Inc., 1655 Warner St., Baltimore, Md.

Davis Emergency Equip. Co. of New England, 130 W. Emerson St., Melrose (Boston), Mass.

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Amco Corp., The, 5733 Grand River Ave., Detroit, Mich.

Mississippi Foundry & Machine Co., Inc., 300 W. South St., Jackson, Miss.

General Equipment Co., 3862 Clayton Ave., St. Louis, Mo.

Hydro-Air, Inc., 1319 S. Vandeventer, St. Louis, Mo.

Aviation Service Supply, 1305 Union Ave., Kansas City, Mo.

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 burgh, Pa.  
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 Reading, Pa.  
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 Ave., N.W., Washington, D.C.  
 Electric-Aire of Fla.-L.W. Co., 1316 Avenida San  
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 apolis, Minn.  
 Riley, H. M., 475 Fifth Ave., New York City,  
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**Electric Cord Co. . . . . 272**  
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 mazoo, Mich.  
 Saginaw Welding Supply Co., 426 S. Washing-  
 ton, Saginaw, Mich.  
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 Mich.  
 Standard Machinery Co., 347 Indiana Ave.,  
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 Martin, John J., Jacob Ford Village, Bldg. 13,  
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 Park, Erie, Pa.  
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 43rd St., Chicago, Ill.  
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 Fene, James F., 4816 Milan St., Houston, Tex.  
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Wagener, R. H., 1172 E. Usal St., Philadelphia, Pa.  
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Guardian Safety Equip. Co., 400 S. Jefferson, Orange, N.J.  
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Universal Safety & Fire, 727 W. Temple, P.O. Box 1587, Salt Lake City, Utah

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Walker, W. W., 1099 Lafayette Dr., N.E., Albuquerque, N.M.  
Miller Swivel Sales Corp., 37 W. Madison Ave., Dumont, N.J.  
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Holloway Co., The, 502 Union St., Austin, Tex.  
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700 W. Mountain St., Kings Mountain, N.C.  
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-J-

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Osgood & Associates, 588 Spring St., N.W., Atlanta, Ga.  
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Little, Ralph E., 3215 Davenport Ave., Davenport, Iowa  
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Power Equip. Sales Co., 77 Summer St., Boston, Mass.  
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Rhodes Equip. Co., 4485 Olive St., St. Louis, Mo.  
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Rone, J. R., P.O. Box 2673, Charlotte, N.C.  
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Gay, Walter H., 1024 S. Perkins Rd., Memphis, Tenn.  
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American Allsafe Co., 1245 Niagara, Buffalo, N.Y.  
Standard Glove Co., 896 Loch Haven Blvd., Maumee, Ohio  
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Smalling & Co., 604 Demonbreun St., Nashville, Tenn.  
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Hughes, David L., Co., 611 Calhoun, Houston, Tex.  
Safety & Supply Co., 115 Blanchard, Seattle, Wash., Ohio  
Pagel Safety Products Inc., 4611 W. National Ave., Milwaukee, Wis.  
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-K-

## **Karel First Aid Supply Co.**

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Protective Equip. Inc., 634 Orleans St., Chicago, Ill.  
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Ors Safety Equip. Co., 390 E. Main St., Louisville, Ky.  
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McDonald, B. F. Co., 3745 Greenbriar Dr., Houston, Tex.  
Industrial Safety Supply Co., 5518 MacCorkle Ave., S.E., Charleston, W. Va.  
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Brossard, Lester L., Co., 540 N. Michigan Ave., Chicago, Ill.  
Safety & Maintenance Equip., 1005 Alfini Dr., Des Plaines, Ill.  
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Safety Equip. & Supply, 1724 W. Main St., Fort Wayne, Ind.  
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 Safety Specialists, P.O. Box 446, Newark, N.J.  
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 Acme Safety Prod. Co., 387 Storer Ave., Akron, Ohio.  
 Ohio Safety Prod. Co., 528 Seymour Ave., Columbus, Ohio.  
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Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Silicone Paper Co. of America  
U. S. Safety Service Co.  
Wilkins Co., Inc.  
Willson Products, Inc.

### Anti-Fogging Cloth for Glasses, Windshields (Anti-Fogging Compounds)

Hygiene Research, Inc.

### Antiseptics

Bullard, E. D., Co.  
Cheesebrough Mfg. Co.  
Davis Emergency Equipment Co.  
Halperin, A. E., Co., Inc.  
Hynson, Wescott & Dunning, Inc.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Medical Supply Co.  
Mine Safety Appliances Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

### Aprons

Allay Mfg. Co.  
Allied Glove Corp.  
American Allsafe Co., Inc.  
American Optical Co.  
Associated Bag & Apron Co.  
Bowman, George H., Jr.  
Boyer-Campbell Co.  
Brouard, Lester J., Co.  
Buhrke, R. H., Co.  
Charleston Rubber Co.  
Chicago Eye Shield Co.  
Davids Gloves, Inc.  
Davis Emergency Equipment Co.  
Dunn Products  
Erell Mfg. Co.  
Far-Ex Corp.  
Fibre-Metal Products Co.  
Fisher Scientific Co.  
Fronmet Industries  
Genter, C. D., Co.  
Goodrich, B. F., Co.  
Goodyear Industrial Products Co., Inc.  
Holcomb Safety Garment Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Karel First Aid Supply Co.  
Kennedy-Ingalls, V. E., Co.  
Kimball Safety Products  
McDonald, B. F., Co.  
Milburn Co.  
Miller Products Co., Inc.  
Mine Safety Appliances Co.

New Jersey Safety Equipment Co.  
Pioneer Rubber Co.  
Piasco Safety Products Co.  
Pulmonan Safety Equipment Corp.  
Racine Glove Co., Inc.  
Record Industrial Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Sawyer, H. M., & Son Co.  
Scientific Industrial Supply Co.  
Seco Safety Products Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Tower, A. J., Co.  
U. S. Safety Service Co.  
West Disinfecting Co.  
Wheeler Protective Apparel, Inc.  
Worklon, Inc.

### Arresters, Flame

New Jersey Safety Equipment Co.

### Artificial Respirator Trainer

Karel First Aid Supply Co.  
Safety First Supply Co.

### Athlete's Foot Retardant

Associated Just Distributors, Inc.  
Dameron Enterprises, Inc.  
Doige, C. H., Co.  
Fuld Bros., Inc.  
Huntington Laboratories, Inc.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Onox, Inc.  
Safety Clothing & Equipment Co.  
Sani-Mist Inc.  
West Disinfecting Co.

### Audiometer

Audivox, Inc.  
Beltona Hearing Aid Co.  
Karel First Aid Supply Co.  
Malco Co.

### Audiometric Testing Rooms

Industrial Acoustics Co., Inc.  
Industrial Sound Control, Inc.  
Karel First Aid Supply Co.  
Malco Co.

### Audio Vendor

Cousino, Inc.

### Automobile Safety Belts (Belts, Safety)

Auto-Crat Mfg. Co.  
Brown-Line Co.  
Hickok Mfg. Co.  
McJohn Corp.  
Radiant Mfg. Co.  
Rose Mfg. Co.  
Stebco Mfg. Co.

### Awards, Prize

Award Incentives  
Hornik, Frederick  
House of Williams  
Metal Arts Co., Inc.  
National Safety Council  
Organization Services, Inc.  
Williams Jewelry & Mfg. Co.

## B

### Badges and Buttons

Award Incentives  
House of Williams  
Matthews, Jas. H., & Co.  
Metal Arts Co., Inc.  
National Safety Council  
Organization Services, Inc.  
Ready Made Sign Co., Inc.  
Williams Jewelry & Mfg. Co.

### Bags, Linemen's Glove

Allied Glove Co.  
Bashlin, W. M., Co.  
Buhrke, R. H., Co.  
Bullard, E. D., Co.  
Central Safety Equipment Co.  
Davis Emergency Equipment Co.  
Genter, C. D., Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Klein, Mathias, & Sons  
McDonald, B. F., Co.  
Miller Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Salisbury, W. H., & Co.  
Scientific Industrial Supply Co.

### Bags, Linemen's Sleeve

Salisbury, W. H., & Co.

### Bags, Linemen's Tool

Bashlin, W. M., Co.  
Buhrke, R. H., Co.  
Bullard, E. D., Co.  
Central Safety Equipment Co.  
Davis Emergency Equipment Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Klein, Mathias, & Sons  
Miller Equipment Co.

See directory of Safety Equipment Sources for addresses.

# classified safety product index

Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Salisbury, W. H., & Co.  
Scientific Industrial Supply Co.

## Bandages, First Aid

Aloe, A. S., Co.  
Bullard, E. D., Co.  
Davis Emergency Equipment Co.  
General Bandages, Inc.  
Halperin, A. E., Co., Inc.  
Industrial Safety Belt Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Medical Supply Co.  
Mine Safety Appliances Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.

## Barrel Lifters

Economy Engineering Co.  
Industrial Products Co.  
Kensico Mfg. Co., Inc.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.

## Barrel and Drum Movers

General Machine & W. W. Inc.  
Industrial Products Co.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.

## Barrel Stands

Economy Engineering Co.  
Huntington Laboratories, Inc.  
Industrial Products Co.  
Miller Products Co., Inc.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.

## Batteries

Dual-Life Co.  
Exide Industrial Div., Electric  
Storage Battery Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Nickel Cadmium Battery Corp.

## Belt Dressing

Allen, W. D., Mfg. Co.  
Davis Emergency Equipment Co.  
McDonald, B. F., Co.  
Safety First Supply Co.

## Belt Shifters

Safety First Supply Co.  
Sury Mfg. Co.

## Belt Shock Absorbers

McDonald, B. F., Co.  
Miller Equipment Co.  
Rose Mfg. Co.  
Safety First Supply Co.

## Belts, Linemen's

Bashlin, W. M., Co.  
Buhke, R. H., Co.  
Bullard, E. D., Co.  
Industrial Products Co.  
Industrial Safety Belt Co.  
Klein, Mathias, & Sons  
McDonald, B. F., Co.  
Miller Equipment Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.  
Standard Glove Co.

## Belts, Safety

Bashlin, W. M., Co.  
Buhke, R. H., Co.  
Bullard, E. D., Co.  
Davis Emergency Equipment Co., Inc.  
Genter, C. D., Co.  
Industrial Products Co.  
Industrial Safety Belt Co.  
Kennedy-Ingalls, V. E., Co.  
Klein, Mathias, & Sons  
McDonald, B. F., Co.  
Miller Equipment Co., Inc.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Rose Mfg. Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.  
Standard Glove Co.  
Standard Safety Equipment Co.

## Beryllium Non Sparking Tools

Beryllium Co.  
Scientific Industrial Supply Co.

## Bins, Towel

Karel First Aid Supply Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Polls, J. D., Mfg. Co.

## Blankets, Fireproofed

Advance Glove Mfg. Co.

Allied Glove Co.  
American Allsafe Co., Inc.  
Associated Bag & Apion Co.  
Bullard, E. D., Co.  
Central Safety Equipment Co.  
Fisher Scientific Co.  
Frommelt Industries  
Halperin, A. E., Co., Inc.  
Holcomb Safety Garment Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Karel First Aid Supply Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Seco Safety Products Co.  
Singer Glove Mfg. Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Wheeler Protective Apparel, Inc.

## Blankets, Linemen's Rubber

Charleston Rubber Co.  
Industrial Products Co.  
McDonald, B. F., Co.  
Miller Products Co., Inc.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Salisbury, W. H., & Co.  
Scientific Industrial Supply Co.

## Blankets, Wool Safety

Allied Glove Co.  
American Allsafe Co., Inc.  
Boyer-Campbell Co.  
Bullard, E. D., Co.  
Central Safety Equipment Co.  
Davis Emergency Equipment Co.  
Genter, C. D., Co.  
Industrial Products Co.  
Industrial Safety Appliances Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Scientific Industrial Supply Co.  
Seco Safety Products Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Wheeler Protective Apparel, Inc.

## Blast Furnace Equipment

Bailey, William M., Co.

## Blocks, Truck Wheel

Calumet Steel Castings Corp.

## Blockers, Mine Car

Safety First Supply Co.

## Blockers, Railroad Car

Industrial Products Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

## Blowers, Hose Mask

Acme Protection Equipment Co.  
Bullard, E. D., Co.  
Davis Emergency Equipment Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

## Blowers, Portable, Electric

Coppas Engineering Corp.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
Safety First Supply Co.

## Blowers, Ventilating

Coppas Engineering Corp.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
Ruemelin Mfg. Co.  
Taller & Cooper, Inc.  
Trane Co.  
Westinghouse Electric Corp.,  
Sturtevant Div. - Hyde Park

## Boards, Changeable Letter

Davenport, A. C., Co.  
Electric Cord Co.  
Kennedy-Ingalls, V. E., Co.  
New Jersey Safety Equipment Co.  
Prairie State Products Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Wagner Sign Service, Inc.

## Books on Safety

Falcon Alarm Co., Inc.  
Fisher Scientific Co.  
National Safety Council  
Ready Made Sign Co., Inc.

## Boots, Linemen's

Allied Glove Co.  
Bashlin, W. M., Co.  
Goodyear Industrial Products Co., Inc.  
Hy-Test Safety Shoes, Div.  
International Shoe Co.  
Miller Products Co., Inc.  
Reese Wooden Sole Shoe Co.  
Safety Clothing & Equipment Co.

## Boots, Rubber

Allied Glove Co.  
American-La-France-Fournie Corp.  
Beacon Falls Rubber Footwear  
Davids Gloves, Inc.  
Dunn Products  
Genter, C. D., Co.  
Industrial Products Co.  
Lehigh Safety Shoe Co.  
McDonald, B. F., Co.  
Miller Products Co., Inc.  
Mine Safety Appliances Co.  
Pleaso Safety Products Co.  
Revere Industrial Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Seco Safety Products Co.  
U. S. Rubber Co.

## Boots, Safety Toe

Hy-Test Safety Shoes, Div.  
International Shoe Co.

## Boots, Wooden Sole

Allied Glove Co.  
Genter, C. D., Co.  
Industrial Products Co.  
McDonald, B. F., Co.  
Reese Wooden Sole Shoe Co.  
Safety Clothing & Equipment Co.  
Scientific Industrial Supply Co.  
Seco Safety Products Co.  
Standard Safety Equipment Co.

## Bottle Carrier

Benson & Associates  
Safety Clothing & Equipment Co.

## Breathing Apparatus,

### Air Supplied

Acme Protection Equipment Co.  
Bomgardner Mfg. Co.  
Bullard, E. D., Co.  
Davis Emergency Equipment Co.  
Genter, C. D., Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Safety First Supply Co.  
Scott Aviation Corp.

## Buckets, Hoisting

Bashlin, W. M., Co.  
Bil-Jax, Inc.  
Buhke, R. H., Co.  
Industrial Products Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

## Buckets, Rubber

Dunn Products  
Fisher Scientific Co.  
Genter, C. D., Co.  
Goodrich, B. F., Co.  
Goodyear Industrial Products Co., Inc.  
McDonald, B. F., Co.  
Miller Products Co., Inc.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.

## Bulletin Boards

American Allsafe Co., Inc.  
Boyer-Campbell Co.  
Davenport, A. C., & Son, Inc.  
Elliott Service Co., Inc.  
Industrial Products Co.  
Matthews, Jas. H., & Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
National Safety Council - Part 2  
New Jersey Safety Equipment Co.  
Prairie State Products Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.  
Standard Safety Equipment Co.

## Burners, Gas

Coppas Engineering Corp.  
Fisher Scientific Co.  
Karel First Aid Supply Co.

## C

## Cabinets, Towel

Carey, Philip, Mfg. Co.  
Huntington Laboratories, Inc.  
West Disinfecting Co.

## Cable Clamps

Bethlehem Steel Corp.  
Genter, C. D., Co.  
Jackson Products, Inc.  
Laughlin, Thomas, Div., American  
Holst & Derrick Co.  
Newman Mfg. & Sales Co.

## Cable Clamps-Sealing Grips

Pyle-National Co.

## Cable Connector

Genter, C. D., Co.  
Jackson Products, Inc.  
United Cable Corp.

## Cable Tester

Mine Safety Appliances Co.

To locate Advertisements, see Advertisers' Index.



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## Cable Wire

American Chain & Cable Co.  
Bethlehem Steel Co.  
Diamond Wire & Cable Co.  
Genter, C. D., Co.  
Macwhyrte Co.  
Union Wire Rope Corp.

## Cans, Safety

Bullard, E. D., Co.  
Dameron Enterprises, Inc.  
Eagle Mfg. Co.  
Fisher Scientific Co.  
Franklin, Bernard, Co., Inc.  
Genter, C. D., Co.  
Industrial Products Co.  
Justite Mfg. Co.  
McDonald, B. F., Co.  
Miller Products Co., Inc.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Polis, J. D., Mfg. Co.  
Protectoseal Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Wallace Optical Co., Inc.

## Canvas, Fireproofed

Advance Glove Mfg. Co.  
Allied Glove Co.  
Associated Bag & Apron Co.  
Boyer-Campbell Co.  
Genter, C. D., Co.  
Holcomb Safety Garment Co.  
Industrial Glove Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
Kimball Safety Products  
McDonald, B. F., Co.  
Miller Products Co., Inc.  
Racine Glove Co., Inc.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Seco Safety Products Co.  
Singer Glove Mfg. Co.  
Wheeler Protective Apparel, Inc.

## Caps for Women

Allied Glove Co.  
Associated Bag & Apron Co.  
Boyer-Campbell Co.  
Brossard, Lester L., Co.  
Chic-Maid Hat Mfg. Co.  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
Industrial Gloves Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
New Era Co.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.  
Standard Glove Co.  
Standard Safety Equipment Co.

## Car, Hopper Closer

American Allsafe Co., Inc.  
Industrial Products Co.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Trumbull Mfg. Co.

## Car Door Opener

American Allsafe Co., Inc.  
Genter, C. D., Co.  
Industrial Products Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

## Carboy Drainer

American Allsafe Co., Inc.  
Fisher Scientific Co.  
Genter, C. D., Co.  
Industrial Products Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Standard Safety Equipment Co.

## Carboys, Plastic

Fisher Scientific Co.  
New Jersey Safety Equipment Co.  
Plax Corp.

## Carboy Tiller

American Allsafe Co., Inc.  
Economy Engineering Co.  
Fisher Scientific Co.  
Goodyear Industrial Products Co., Inc.  
Industrial Products Co.  
Miller Products Co., Inc.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.  
Standard Safety Equipment Co.

## Carboy Truck

Industrial Products Co.  
Karel First Aid Supply Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

## Carrier, Bottle

Benson & Associates  
Fisher Scientific Co.  
Karel First Aid Supply Co.  
Safety Clothing & Equipment Co.

## Carriers, Drum and Barrel

General Machine & W. W. Inc.  
Industrial Products Co.  
Karel First Aid Supply Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

## Carriers, Food

Karel First Aid Supply Co.  
Vacuum Can Co.

## Carriers for Cylinders

Bongardner Mfg. Co.  
General Machine & W. W. Inc.  
Karel First Aid Supply Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

## Chain

American Chain & Cable Co.  
Columbus-McKinnon Chain Corp.  
Taylor, S. G., Chain Co.

## Chain, Coil

Canton Mfg. Co.

## Chain, Spark Resisting

Ampco Metal, Inc.

## Chains, Magnet

Taylor, S. G., Chain Co.

## Chains, Sling

American Chain & Cable Co.  
Columbus-McKinnon Chain Corp.  
Taylor, S. G., Chain Co.  
Wickwire-Spencer Div., Colorado  
Fuel & Iron Corp.

## Chairs, Safety Boatswain

McDonald, B. F., Co.  
Mine Safety Appliances Co.

## Chisel Grip

American Allsafe Co., Inc.  
Industrial Products Co.  
McDonald, B. F., Co.  
Rose Mfg. Co.  
Standard Safety Equipment Co.

## Chocks, Wheel

Calumet Steel Castings Corp.

## Clamps

Clanton Rubber Co.  
Custanite Corp.  
Fisher Scientific Co.  
Genter, C. D., Co.  
Kenston Mfg. Co., Inc.  
Merrill Bros.  
Newman Mfg. & Sales Co.

## Clamps, Rail

American Allsafe Co., Inc.  
Genter, C. D., Co.  
Industrial Products Co.  
Pulmonan Safety Equipment Corp.  
Ready Made Sign Co., Inc.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Standard Safety Equipment Co.

## Clamps, Sockets and Eyebolts

Laughlin, Thomas, Div., American  
Hoist & Derrick Co.  
Macwhyrte Co.  
Newman Mfg. & Sales Co.

## Clamps, Wire Rope

Macwhyrte Co.  
Newman Mfg. & Sales Co.

## Clay Gun

Bailey, W. M., Co.

## Cleaners, Vacuum Industrial

Brulin & Co., Inc.  
Dameron Enterprises, Inc.  
Finnell System, Inc.  
Handling Devices Co., Inc.  
Hild Floor Machine Co.  
Hillyard Chemical Co.  
Huntington Laboratories, Inc.  
Invincible Vacuum Cleaner Mfg. Co.  
Lincoln-Schlueter Floor Mach. Co.  
M-M-A, Inc.

## Cleaning Compounds or Solvents

Associated Just Distributors, Inc.  
Brulin & Co., Inc.  
Curran Corp.  
Diverser Corp.  
Dolge, C. B., Co.  
DuPont, E. I., de Nemours & Co., Inc.  
Fine Organics, Inc.  
Finnell System, Inc.  
Flor-Dry Co.  
Franklin Research, Inc.  
Fuld Bros., Inc.  
Hallemite Mfg. Co.  
Hillyard Chemical Co.  
Homestead Valve Mfg. Co.  
Huntington Laboratories, Inc.  
Karel First Aid Supply Co.

## Kelite Corp.

Legge, Walter G., Co., Inc.  
Magnus Chemical Co., Inc.  
Pittsburgh Plate Glass Co.  
Practical Mfg. Co.  
Test, Inc.  
Vestal, Inc.  
West Disinfecting Co.  
Wilkins Co., Inc.  
Wyandotte Chemicals Corp.

## Cleaning Machines, Floor

Dameron Enterprises, Inc.  
Finnell System, Inc.  
Handling Devices Co., Inc.  
Hild Floor Machine Co.  
Hillyard Chemical Co.  
Homestead Valve Mfg. Co.  
Huntington Laboratories, Inc.  
Lincoln-Schlueter Floor Mach. Co.  
Tennant, G. H., Co.  
Vestal, Inc.  
West Disinfecting Co.

## Cleaning Tissues, Goggle

American Allsafe Co., Inc.  
American Optical Co.  
Bullard, E. D., Co.  
Carhoff Co.  
Iow Corning Corp.  
Fisher Scientific Co.  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
Industrial Products Co.  
Karel First Aid Supply Co.  
Kimberly-Clark Corp.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
Seco Safety Products Co.  
Silicone Paper Co. of America  
Standard Safety Equipment Co.  
T. S. Safety Service Co.  
Wilkins Co., Inc.

## Climbers for Linemen

Rashlin, W. M., Co.  
Genter, C. D., Co.  
Klein, Mathias, & Sons  
McDonald, B. F., Co.  
Miller Equipment Co.  
Mine Safety Appliances Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

## Climbers, for Swing Stage

or Basket  
Albina Engine & Machine Wks., Inc.  
Bil-Jax, Inc.

## Clothing, Acid Resistant

Advance Glove Mfg. Co.  
Allied Glove Co.  
American Allsafe Co., Inc.  
American Optical Co.  
Bullard, E. D., Co.  
Central Safety Equipment Co.  
Charleston Rubber Co.  
Davids Gloves, Inc.  
Dunn Products  
Fisher Scientific Co.  
Genter, C. D., Co.  
Goodrich, B. F., Co.  
Goodyear Industrial Products Co., Inc.  
Industrial Gloves Co.  
Industrial Products Co.  
Karel First Aid Supply Co.  
Kennedy-Ingalls, V. E., Co.  
Kimball Safety Products  
McDonald, B. F., Co.  
Milburn Co.  
Miller Products Co., Inc.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Olympic Glove Co., Inc.  
Plasco Safety Products Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Sawyer, H. M., & Son Co.  
Scientific Industrial Supply Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Tower, A. J., Co.  
West Disinfecting Co.  
Wheeler Protective Apparel, Inc.  
Worklon, Inc.

## Clothing, Fireproofed

Advance Glove Mfg. Co.  
Allied Glove Co.  
American Allsafe Co., Inc.  
American-LaFrance-Foamite Corp.  
American Optical Co.  
Boyer-Campbell Co.  
Bullard, E. D., Co.  
Central Safety Equipment Co.  
Davids Gloves, Inc.  
DuPont, E. I., de Nemours & Co.  
Dunn Products  
Far-Rx Corp.  
Frommelt Industries  
Holcomb Safety Garment Co.  
Genter, C. D., Co.  
Industrial Products Co.  
Industrial Gloves Co.  
Kennedy-Ingalls, V. E., Co.  
Kimball Safety Products  
McDonald, B. F., Co.  
Milburn Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Olympic Glove Co., Inc.  
Plasco Safety Products Co.  
Pulmonan Safety Equipment Corp.  
Racine Glove Co., Inc.  
Safety Clothing & Equipment Co.

See directory of Safety Equipment Sources for addresses.

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Safety First Supply Co.  
Scientific Industrial Supply Co.  
Singer Glove Mfg. Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Wheeler Protective Apparel, Inc.

## Clothing, Industrial

Advance Glove Mfg. Co.  
Allied Glove Co.  
American Allsafe Co., Inc.  
American Optical Co.  
Boyer-Campbell Co.  
Bullard, E. D., Co.  
Davids Gloves, Inc.  
Dunn Products  
Frommelt Industries  
Genter, C. D., Co.  
Goodrich, B. F., Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
Kimball Safety Products  
McDonald, B. F., Co.  
Milburn Co.  
Miller Products Co., Inc.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Olympic Glove Co., Inc.  
Plasco Safety Products Co.  
Pulmonas Safety Equipment Corp.  
Racine Glove Co., Inc.  
Safety Clothing and Equipment Co.  
Safety First Supply Co.  
Sawyer, H. M., & Son Co.  
Scientific Industrial Supply Co.  
Tower, A. J., Co.  
Wheeler Protective Apparel, Inc.  
Worklon, Inc.

## Clothing, Linemen's

Advance Glove Mfg. Co.  
American Allsafe Co., Inc.  
American Optical Co.  
Bashlin, W. M., Co.  
Dunn Products  
Genter, C. D., Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Record Industrial Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Sallishory, W. H. & Co.  
Sawyer, H. M., & Son Co.  
Scientific Industrial Supply Co.  
Tower, A. J., Co.  
Wheeler Protective Apparel, Inc.

## Clothing, Protective

Advance Glove Mfg. Co.  
Allay Mfg. Co.  
American Allsafe Co., Inc.  
American Optical Co.  
Boyer-Campbell Co.  
Brossard, Lester L., Co.  
Bullard, E. D., Co.  
Central Safety Equipment Co.  
Charleston Rubber Co.  
Davids Gloves, Inc.  
Dunn Products  
Far-Ex Corp.  
Fibre-Metal Products Co.  
Fisher Scientific Co.  
Frommelt Industries  
General Scientific Equipment Co.  
Genter, C. D., Co.  
Goodrich, B. F., Co.  
Holcomb Safety Garment Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
Kimball Safety Products  
McDonald, B. F., Co.  
Milburn Co.  
Miller Products Co., Inc.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Olympic Glove Co., Inc.  
Plasco Safety Products Co.  
Racine Glove Co., Inc.  
Record Industrial Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Safe-Way Industries, Inc.  
Sawyer, H. M., & Son Co.  
Scientific Industrial Supply Co.  
Singer Glove Mfg. Co.  
Standard Safety Equipment Co.  
Tower, A. J., Co.  
West Disinfecting Co.  
Wheeler Protective Apparel, Inc.  
Worklon, Inc.

## Clothing, Rubber

Advance Glove Mfg. Co.  
Allied Glove Co.  
American Allsafe Co., Inc.  
American-LaFrance Foamite Corp.  
Charleston Rubber Co.  
Davids Gloves, Inc.  
Dunn Products  
Genter, C. D., Co.  
Goodrich, B. F., Co.  
Goodyear Industrial Products Co., Inc.  
Industrial Products Co.  
Karel First Aid Supply Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Miller Products Co., Inc.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Plasco Safety Products Co.  
Pulmonas Safety Equipment Corp.  
Record Industrial Co.  
Safety Clothing and Equipment Co.  
Safety First Supply Co.  
Sawyer, H. M., & Son Co.  
Scientific Industrial Supply Co.  
Standard Glove Co.

Standard Safety Equipment Co.  
Tower, A. J., Co.  
U. S. Rubber Co.

## Clothing, Weatherproof

Allied Glove Co.  
American Allsafe Co., Inc.  
American Optical Co.  
Dunn Products  
Genter, C. D., Co.  
Goodrich, B. F., Co.  
Goodyear Industrial Products Co., Inc.  
Holcomb Safety Garment Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Milburn Co.  
Miller Products Co., Inc.  
Plasco Safety Products Co.  
Record Industrial Co.  
Safety Clothing and Equipment Co.  
Safety First Supply Co.  
Sawyer, H. M., & Son Co.  
Scientific Industrial Supply Co.  
Standard Glove Co.  
Tower, A. J., Co.

## Clothing for Women Workers

Allied Glove Co.  
Dunn Products  
Genter, C. D., Co.  
Industrial Gloves Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Milburn Co.  
Safety Clothing and Equipment  
Safety First Supply Co.  
Sawyer, H. M., & Son Co.  
Tower, A. J., Co.  
Worklon, Inc.

## Collectors, Dust

Aerotec Corp.  
Craftools, Inc.  
Day Co.  
Hild Floor Machine Co.  
Johnson-March Corp.  
Mine Safety Appliances Co.  
Ruemelin Mfg. Co.  
Schneible, Claude B., Co.  
Surti Mfg. Co.  
Torit Mfg. Co.  
Wheelabrator Corp.

## Collectors, Fume

Johnson-March Corp.  
Mine Safety Appliances Co.  
Ruemelin Mfg. Co.  
Safety First Supply Co.  
Schneible, Claude B., Co.  
Wheelabrator Corp.

## Conductometer

Conductive Hospital Accessories Co.  
Federal Flooring Corp.

## Connecting Links

Laughlin, Thomas, Div.  
American Hoist & Derrick Co.

## Connectors, Electrical

Joy Mfg. Co.  
Pyle-National Co.  
United Cable Corp.

## Connectors, Wire Rope

Macwhyte Co.

## Containers, Explosive Liquid

Eagle Mfg. Co.  
Industrial Products Co.  
Justrite Mfg. Co.  
McDonald, B. F., Co.  
New Jersey Safety Equipment Co.  
Polls, J. D., Mfg. Co.  
Protectoseal Co.  
Pulmonas Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

## Conveyors

Link-Belt Co.

## Cords, Electric

Diamond Wire & Cable Co.

## Cords, Extension

Diamond Wire and Cable Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
McGill Mfg. Co.  
United Cable Corp.

## Cots

Brossard, Lester L., Co.  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
Karel First Aid Supply Co.  
New Jersey Safety Equipment Co.  
Washington Products Co.

## Cover Lens

American Industrial Safety Equipment Co.  
Bausch & Lomb Optical Co.  
Bullard, E. D., Co.  
Chicago Eye Shield Co.  
Dockson Corp.  
Fendall Co.  
Fibre-Metal Products Co.  
Genter, C. D., Co.  
Industrial Products Co.  
Jackson Products Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.

New Jersey Safety Equipment Co.  
Pioneer Scientific Corp.  
Pulmonas Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Sellstrom Manufacturing Co.  
Standard Safety Equipment Co.  
U. S. Safety Service Co.  
Wallace Optical Co., Inc.  
Watchmaker Optical Co.  
Welsh Mfg. Co.  
Willson Products, Inc.

## Cover Lifter

McDonald, B. F., Co.

## Covers, Self-Closing

Bustin Steel Products, Inc.  
Protectoseal Co.

## Curtains, Fireproofed

Allied Glove Co.  
Advance Glove Mfg. Co.  
American Allsafe Co., Inc.  
Associated Bag & Apron Co.  
Boyer-Campbell Co.  
Brossard, Lester L., Co.  
Central Safety Equipment Co.  
Far-Ex Corp.  
Frommelt Industries  
Genter, C. D., Co.  
Holcomb Safety Garment Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
Kimball Safety Products  
Milburn Co.  
New Jersey Safety Equipment Co.  
Racine Glove Co., Inc.  
Safety Clothing and Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Singer Glove Mfg. Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Trans Wall Coated Products—  
Bemis Bro. Bag Co.  
Wheeler Protective Apparel, Inc.

## Curtains, Welder's

Advance Glove Mfg. Co.  
Allied Glove Co.  
American Allsafe Co., Inc.  
Associated Bag & Apron Co.  
Bemis Bro. Bag Co.—Trans Wall  
Coated Products  
Boyer-Campbell Co.  
Brossard, Lester L., Co.  
Bullard, E. D., Co.  
Central Safety Equipment Co.  
Frommelt Industries  
Genter, C. D., Co.  
Holcomb Safety Garment Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
Kimball Safety Products  
McDonald, B. F., Co.  
New Jersey Safety Equipment Co.  
Racine Glove Co., Inc.  
Safety Clothing & Equipment Co.  
Sawyer, H. M., & Son Co.  
Scientific Industrial Supply Co.  
Seeo Safety Products Co.  
Singer Glove Mfg. Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Wheeler Protective Apparel, Inc.

## Cutting Machines—Pipe

Wachs, E. H., Co.

## D

## Deck Platforms

Albina Engine & Machine Works, Inc.  
Bustin Steel Products, Inc.  
Magline Inc.

## Degreasers—Parts

Practical Mfg. Co.

## Deodorizing Appliances

Associated Just Distributors, Inc.  
Fuld Bros., Inc.  
Huntington Laboratories, Inc.  
Karel First Aid Supply Co.  
Oxy-Catalyst, Inc.  
West Disinfecting Co.

## Detectors, Carbon Monoxide

Davis Emergency Equipment Co., Inc.  
Fisher Scientific Company  
Kruger, Harold, Instruments  
McDonald, B. F., Co.  
Medical Supply Company  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Taller & Cooper, Inc.  
U.S. Safety Service Co.

## Detectors, Fire

American-LaFrance-Foamite Corp.  
"Automatic" Sprinkler Corp. of  
America  
Davis Emergency Equipment Co.  
Falcon Alarm Co., Inc.  
Fenwal Incorporated  
Grinnell Co., Inc.  
Kiddie, Walter & Co., Inc.  
Mine Safety Appliances Co.  
Pyrene-C-O-Two

## Detectors, Gas

Bullard, E. D., Co.

To locate Advertisements, see Advertisers' Index.

# classified safety product index

Davis Emergency Equipment Co.  
Johnson-Williams Inc.  
Krugger, Harold, Instruments  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Safety First Supply Co.  
Taller & Cooper, Inc.

## Detectors, Smoke

Cardux Corp.

## Disinfectants and Deodorants

Associated Just Distributors, Inc.  
Brulin & Co., Inc.  
Dameron Enterprises, Inc.  
Diversey Corp., The  
Doige, C. B., Co.  
Fine Organics, Inc.  
Fuld Bros., Inc.  
Hillyard Chemical Co.  
Huntington Laboratories, Inc.  
Karel First Aid Supply Co.  
Magnus Chemical Co., Inc.  
Osox, Inc.  
Vestal, Inc.  
West Disinfecting Co.

## Dispensary Equipment

Aise, A. S., Co.  
Halperin, A. E., Co., Inc.  
Industrial Products Co.  
Karel First Aid Supply Co.  
Safety Clothing and Equipment Co.  
Safety First Supply Co.  
Smith, D. B., & Co., Inc.

## Dispensers, Foot Spray

Karel First Aid Supply Co.  
Sani-Mist, Inc.

## Dispensers, Goggle Cleaning

American Allsafe Co., Inc.  
American Optical Co.  
Buckley Corp.  
Bullard, E. D., Co.  
Dow Corning Corp.  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
Industrial Products Co.  
Karel First Aid Supply Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing and Equipment Co.  
Safety First Supply Co.  
Seo Safety Products Co.  
Silicone Paper Co. of America  
Standard Safety Equipment Co.  
U. S. Safety Service Co.  
Wilkins Co., Inc.

## Dispensers, Salt Tablet

Ace Mfg. Co.  
American Allsafe Co., Inc.  
Bullard, E. D., Co.  
Central Safety Equipment Co.  
Davis Emergency Equipment Co.  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
Industrial Products Co.  
International Salt Co., Inc.  
Karel First Aid Supply Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Medical Supply Co.  
Mine Safety Appliances Co.  
Morton Salt Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing and Equipment Co.  
Safety First Supply Co.  
Seo Safety Products Co.  
Standard Safety Equipment Co.  
U. S. Safety Service Co.

## Dispensers, Sanitary Napkins

Dameron Enterprises, Inc.  
Halperin, A. E., Co., Inc.  
Huntington Laboratories, Inc.  
Karel First Aid Supply Co.  
West Disinfecting Co.

## Dispensers, Soap

Bradley Washfountain Co.  
Brulin & Co., Inc.  
Chemical Corp.  
Dameron Enterprises, Inc.  
Doige, C. B., Co.  
Finnell Systems, Inc.  
Genter, C. D., Co.  
Hillyard Chemical Co.  
Huntington Laboratories, Inc.  
Karel First Aid Supply Co.  
Lightfoot Schultz Co.  
Packwood, G. H., Mfg. Co.  
Safety Clothing and Equipment Co.  
Safety First Supply Co.  
Seo Safety Products Co.  
Vestal, Inc.  
West Disinfecting Co.

## Dockboards

Dazzo Products, Inc.  
Frommelt Industries

## Dock Shelter

Bustin Steel Products, Inc.  
Industrial Products Co.  
Magline, Inc.  
Penco Engineering Co.  
Searjeant Metal Products, Inc.

## Doors, Fire and Service

Kinnear Mfg. Co.

## Doors, Panic Device

American Allsafe Co., Inc.  
Vonnegut Hardware Co.

## Drill Table, Safety

Franklin, Bernard, Co., Inc.  
Modern Machine Tool Co.

## Drinking Cups, Paper

Bullard, E. D., Co.  
Continental Can Co.  
Dameron Enterprises, Inc.  
Davis Emergency Equipment Co.  
Halperin, A. E., Co., Inc.  
Karel First Aid Supply Co.  
Medical Supply Co.  
Safety Clothing and Equipment Co.  
Scientific Industrial Supply Co.  
U. S. Envelope Co.

## Drinking Fountains

Bradley Washfountain Co.  
Haws Drinking Faucet Co.  
McDonald, B. F., Co.  
Safety First Supply Co.  
Smith, D. B., & Co., Inc.  
Taylor, Halsey W., Co.

## Drinking Fountains, Portable

Haws Drinking Faucet Co.  
Industrial Products Co.  
McDonald, B. F., Co.  
Safety Clothing and Equipment Co.  
Safety First Supply Co.  
Smith, D. B., & Co., Inc.

## Driver Training Materials

National Safety Council  
Porto-Clinic Instruments Co.

## Drum Fittings

Goodyear Industrial Products Co., Inc.  
Merrill Bros.  
Miller Products Co., Inc.  
Protectoseal Co., The

## Drum Movers

Bustin Steel Products, Inc.

## Drum Openers

Merrill Bros.

## Drum Valve

Central Safety Equipment Co.

## Dryers, Electric, Safety Equipment

Chicago Hardware Foundry Co.

## Dryers, Face and Hand Electric

Chicago Hardware Foundry Co.  
Electric-Aire Engineering Corp.  
Huntington Laboratories, Inc.

## Dust Arresters

Associated Just Distributors, Inc.  
Fuld Bros., Inc.  
Johnson-March Corp.  
Ruemelin Mfg. Co.  
Schneible, Claude B., Co.  
Wheelabrator Corp.

## Dust Collectors

Aerotec Corp.  
Craftools, Inc.  
Day Co.  
Johnson-March Corp.  
Mine Safety Appliances Co.  
Ruemelin Mfg. Co.  
Schneible, Claude B., Co.  
Torit Mfg. Co.  
Westinghouse Electric Corp.,  
Sturtevant Div.—Hyde Park  
Wheelabrator Corp.

## Dust Control Systems

Johnson-March Corp.  
Taller & Cooper, Inc.  
Trane Co.  
Wheelabrator Corp.

## Dust Counter

Bausch & Lomb Optical Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
Willson Products, Inc.

## Dust Hoods

American Allsafe Co., Inc.  
Bullard, E. D., Co.  
Chicago Eye Shield Co.  
Craftools, Inc.  
DeWalt, Inc.  
Fibre-Metal Products Co.  
Genter, C. D., Co.  
Holcomb Safety Garment Co.  
Industrial Products Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Schneible, Claude B., Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Wago Products, Inc.  
Willson Products, Inc.

## Dust Suction Equipment

Craftools, Inc.  
New York Belting & Packing Co.  
Ruemelin Mfg. Co.  
Torit Mfg. Co.

## Dusters, Rock

Mine Safety Appliances Co.

## Dyna-Switch

Dillon, W. C., & Co.

## E

### Ear Stoppers

American Allsafe Co., Inc.  
Bullard, E. D., Co.  
Davis Emergency Equipment Co.  
Genter, C. D., Co.  
Karel First Aid Supply Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Safety Ear Protector Co.  
Seo Safety Products Co.  
Sigma Eng. Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Surgical Mechanical Research Inc.  
United Cable Co.

### Ejectors, Air

Littell, F. J., Machine Co.  
Safety Clothing and Equipment Co.  
Schrader's, A., Son Division of  
Scovill Mfg. Co., Inc.  
Standard Safety Equipment Co.

### Electrode Holders

American Industrial Safety Equipment Co.  
Boyer-Campbell Co.  
Buhke, R. H., Co.  
Fibre-Metal Products Co.  
Fisher Scientific Co.  
Genter, C. D., Co.  
Jackson Products, Inc.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.

### Elevating Table

Bomgardner Mfg. Co.  
Economy Engineering Co.  
Karel First Aid Supply Co.

### Emblems, Safety

Award Incentives  
Brady, W. H., Co.  
Genter, C. D., Co.  
House of Williams  
Matthews, Jas. H., & Co.  
Metal Arts Co., Inc.  
National Safety Council—Part 2  
Williams Jewelry & Mfg. Co.

### Emergency Lighting

American Allsafe Co., Inc.  
American Optical Co.  
Boyer-Campbell Co.  
Dual-Lite Co.  
Dynaseal Corp.  
Eastern Metal of Elmira, Inc.  
Electric Cord Co.  
Exide Industrial Div., Electric  
Storage Battery Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
Nickel Cadmium Batteries Corp.  
Prairie State Products Co.  
Seo Safety Products Co.  
U-C Lite Mfg. Co.

### Explosion-Proof Switches

Micro Switch Div. of Minneapolis-Honeywell Regulator Co.

### Explosives Carrier

Mine Safety Appliances Co.

### Exterminator, Rodent

Doige, C. B., Co.  
West Disinfecting Co.

### Eye Shades, Non-Flammable

Bullard, E. D., Co.  
Chicago Eye Shield Co.  
Dockson Corp.  
Dunn Products  
Fendall Co.  
Genter, C. D., Co.  
Jones & Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Pulmonan Safety Equipment Corp.  
Sollstrom Mfg. Co.  
U. S. Safety Service Co.  
Wallace Optical Co., Inc.  
Willson Products, Inc.

### Eye Shields

American Industrial Safety Equipment Co.  
Bausch & Lomb Optical Co.  
Boyer-Campbell Co.  
Brossard, Lester L., Co.  
Bullard, E. D., Co.  
Chicago Eye Shield Co.  
Dockson Corp.  
Dunn Products  
Fendall Co.  
Fibre-Metal Products Co.  
Fisher Scientific Co.  
Genter, C. D., Co.  
Industrial Products Co.  
Jackson Products Co.  
Kimball Safety Products

See directory of Safety Equipment Sources for addresses.

## classified safety product index

McDonald, B. F., Co.  
 Michell Mfg. Co.  
 Mine Safety Appliances Co.  
 New Jersey Safety Equipment Co.  
 Pulmosan Safety Equip. Corp.  
 Safety Clothing & Equipment Co.  
 Safety First Supply Co.  
 Sellstrom Mfg. Co.  
 Standard Glove Co.  
 Standard Safety Equipment Co.  
 U. S. Safety Service Co.  
 Wallace Optical Co., Inc.  
 Watchemoket Optical Co.  
 Willson Products, Inc.

### Eye Washing Fountain

American Allsafe Co., Inc.  
 Benson & Associates  
 Halperin, A. E., Co., Inc.  
 Haws Drinking Faucet Co.  
 Industrial Products Co.  
 Karel First Aid Supply Co.  
 Kennedy-Ingalls, V. E., Co.  
 McDonald, B. F., Co.  
 New Jersey Safety Equipment Co.  
 Safety First Supply Co.  
 Sellstrom Mfg. Co.  
 Speakman Co.  
 Standard Safety Equipment Co.

### Eyesight Surveys

American Optical Co.  
 Bausch & Lomb Optical Co.  
 Keystone View Co.  
 U. S. Safety Service Co.

## F

### Face Shields

American Allsafe Co., Inc.  
 American Industrial Safety Equipment Co.  
 American Optical Co.  
 Bausch & Lomb Optical Co.  
 Boyer-Campbell Co.  
 Brossard, Lester L., Co.  
 Bullard, E. D., Co.  
 Central Safety Equipment Co.  
 Chicago Eye Shield Co.  
 Davis Emergency Equipment Co.  
 Dockson Corp.  
 Fendall Co.  
 Fibre-Metal Products Co.  
 Fisher Scientific Co.  
 Genter, C. D., Co.  
 Industrial Products Co.  
 Jackson Products Co.  
 Kennedy-Ingalls, V. E., Co.  
 Kimball Safety Products  
 McDonald, B. F., Co.  
 Michell Mfg. Co.  
 Mine Safety Appliances Co.  
 New Jersey Safety Equipment Co.  
 Pulmosan Safety Equipment Corp.  
 Safety Clothing & Equipment Co.  
 Safety First Supply Co.  
 Scientific Industrial Supply Co.  
 Seeco Safety Products Co.  
 Sellstrom Mfg. Co.  
 Standard Glove Co.  
 Standard Safety Equipment Co.  
 U. S. Safety Service Co.  
 Wallace Optical Co., Inc.  
 Watchemoket Optical Co.  
 Welsh Mfg. Co.  
 Willson Products, Inc.

### Fans, Exhaust

Allied Witan Co.  
 Carey, Philip, Mfg. Co.  
 Coppus Engineering Corp.  
 DeVilbiss Co.  
 Mine Safety Appliances Co.  
 Robbins & Myers, Inc.  
 Trane Co.  
 Westinghouse Electric Corp.,  
 Sturtevant Div. - Hyde Park

### Fan Guards

Rochester Safety Equip. Co.  
 Scientific Industrial Supply Co.

### Fans, Ventilating

Carey, Philip, Mfg. Co.  
 Coppus Engineering Corp.  
 Mine Safety Appliances Co.  
 Trane Co.  
 Westinghouse Electric Corp.,  
 Sturtevant Div. - Hyde Park

### Faucets, Self-Closing

Haws Drinking Faucet Co.  
 Protecto Seal Co.

### Film Badge Service

Landauer, R. S. Jr., & Co.  
 R-C Scientific Instrument Co.

### Feeders, Punch Press

Boyer-Campbell Co.  
 Industrial Products Co.  
 Littell, F. J., Machine Co.  
 Osborn Mfg. Co.

### Fillers, Gasoline

Eagle Mfg. Co.  
 McDonald, B. F., Co.

### Films or Slides, Safety

Association Films, Inc.  
 Audio Production, Inc.  
 Falcon Alarm Co., Inc.  
 Ideal Pictures  
 National Safety Council - Part 2

### Filters, Air Device

Allied Witan Co.  
 Coppus Engineering Corp.  
 DeVilbiss Co.  
 Engman Engineering Co.  
 McDonald, B. F., Co.  
 Mine Safety Appliances Co.  
 Pulmosan Safety Equipment Corp.  
 Safety First Supply Co.  
 Schrader's, A. Son Div. of  
 Scovill Mfg. Co., Inc.  
 Westinghouse Electric Corp.,  
 Sturtevant Div. - Hyde Park

### Fire Alarms

Falcon Alarm Co., Inc.  
 Federal Sign & Signal Corp.  
 Gamewell Co.  
 Grinnell Co., Inc.  
 Pyrene-C-O-Two  
 Safety First Supply Co.  
 Spertl Faraday, Inc.  
 Sterling Siren Fire Alarm Co., Inc.

### Fire Detectors

American-LaFrance-Foamite Corp.  
 "Automatic" Sprinkler Corp. of  
 America  
 Cardox Corp.  
 Electronics Corp. of America  
 Falcon Alarm Co., Inc.  
 Fenwal Inc.  
 Grinnell Co., Inc.  
 Kidde, Walter, & Co., Inc.  
 Mine Safety Appliances Co.  
 Pyrene-C-O-Two

### Fire Doors

Kinnear Mfg. Co.

### Fire Extinguishers

Ace Fire Equipment Co.  
 Allen, W. D., Mfg. Co.  
 American Industrial Safety  
 Equipment Co.  
 American-LaFrance-Foamite Corp.  
 Ansol Chemical Co.  
 "Automatic" Sprinkler Corp.  
 of America  
 Buffalo Fire Appliance Corp.  
 Firetox System, Inc.  
 Fisher Scientific Co.  
 Fyr-Fyter Co.  
 Genter, C. D., Co.  
 Justitie Mfg. Co.  
 Kidde, Walter, & Co., Inc.  
 McDonald, B. F., Co.  
 National Foam System  
 Pulmosan Safety Equipment Corp.  
 Pyrene-C-O-Two  
 Randolph Laboratories  
 Safety Clothing & Equipment Co.  
 Safety First Supply Co.  
 Scientific Industrial Supply Co.  
 Seeco Safety Products Co.  
 Smith, D. B., & Co., Inc.  
 Stop-Fire, Inc.

### Fire Extinguisher Recharges and Equipment

Ace Fire Equipment Co.  
 Allen, W. D., Mfg. Co.  
 American-LaFrance-Foamite Co.  
 Ansol Chemical Co.  
 Genter, C. D., Co.  
 Kidde, Walter, & Co., Inc.  
 Nat'l Foam System, Inc.  
 Safety Clothing & Equipment Co.  
 Safety First Supply Co.  
 Seeco Safety Products Co.  
 Stop-Fire, Inc.

### Fire Extinguisher Seals

Ace Fire Equipment Co.  
 Genter, C. D., Co.  
 Safety Clothing & Equipment Co.  
 Safety First Supply Co.  
 Seeco Safety Products Co.

### Fire Extinguishing Foam

Ace Fire Equipment Co.  
 Allen, W. D., Mfg. Co.  
 American-LaFrance-Foamite Corp.  
 "Automatic" Sprinkler Corp.  
 of America  
 Central Safety Equipment Co.  
 Genter, C. D., Co.  
 Grinnell Co., Inc.  
 National Foam System, Inc.  
 Rockwood Sprinkler Corp.  
 Safety First Supply Co.  
 Seeco Safety Products Co.

### Fire Extinguishing Systems

Allen, W. D., Mfg. Co.  
 American-LaFrance-Foamite Corp.  
 Ansol Chemical Co.  
 "Automatic" Sprinkler Corp.  
 of America  
 Bean, John, Div. Food Machine  
 & Chemical Corp.  
 Cardox Corp.  
 Firetox System, Inc.  
 Genter, C. D., Co.  
 Grinnell Co., Inc.  
 Kidde, Walter, & Co., Inc.  
 Nat'l Foam Systems, Inc.  
 Pyrene-C-O-Two  
 Seeco Safety Products Co.

### Fire Foam Generators

American-LaFrance-Foamite Corp.  
 Central Safety Equipment Co.

Grinnell Co., Inc.  
 National Foam System, Inc.  
 Safety First Supply Co.  
 Seeco Safety Products Co.

### Fire Hose

Ace Fire Equipment Co.  
 Allen, W. D., Mfg. Co.  
 American Allsafe Co., Inc.  
 American-LaFrance-Foamite Corp.  
 Genter, C. D., Co.  
 Goodyear Industrial Products Co., Inc.  
 Miller Products Co., Inc.  
 New York Belting & Packing Co.  
 Pulmosan Safety Equipment Co.  
 Safety First Supply Co.  
 Scientific Industrial Supply Co.  
 Seeco Safety Products Co.

### Fire Hose Reels

Hannay, Clifford B., & Sons, Inc.

### Fire Nozzles

Akron Brass Mfg. Co.  
 Allen, W. D., Mfg. Co.  
 American Allsafe Co., Inc.  
 Ansol Chemical Co.  
 "Automatic" Sprinkler Corp.  
 of America  
 Bean, John, Div. Food Machine  
 & Chemical Corp.  
 Central Safety Equipment Co.  
 Genter, C. D., Co.  
 McIntyre, F. N., Brass Works, Inc.  
 Rockwood Sprinkler Corp.  
 Seeco Safety Products Co.

### Fire Pumps

Ansol Chemical Co.  
 Bean, John, Div. Food Machine  
 & Chemical Corp.  
 Safety First Supply Co.  
 Smith, D. B., & Co., Inc.

### Fire Sirens

Bongardner Mfg. Co.  
 Federal Sign & Signal Corp.  
 Genter, C. D., Co.  
 Pyrie National Co.  
 Seeco Safety Products Co.  
 Sterling Siren Fire Alarm Co., Inc.

### Fire Trac

C. M. C. Co.

### Fire Trucks

American-LaFrance-Foamite Corp.  
 Ansol Chemical Co.  
 Bean, John, Div. Food Machine  
 & Chemical Corp.  
 C. M. C. Co.  
 Cardox Corp.  
 Seeco Engineering & Mfg. Inc., Div.  
 of Seeco Safety Products Co.

### First Aid Cabinets

Bullard, E. D., Co.  
 Davis Emergency Equip. Co., Inc.  
 Fisher Scientific Co.  
 Halperin, A. E., Co., Inc.  
 Industrial Products Co.  
 Karel First Aid Supply Co.  
 Kennedy-Ingalls, V. E., Co.  
 McDonald, B. F., Co.  
 Medical Supply Co.  
 Mine Safety Appliances Co.  
 New Jersey Safety Equipment Co.  
 Safety Clothing & Equipment Co.  
 Safety First Supply Co.  
 Seeco Safety Products Co.

### First Aid Kits

Aloe, A. S., Co.  
 American Optical Co.  
 Bullard, E. D., Co.  
 Davis Emergency Equip. Co., Inc.  
 D. R. S. Labs.  
 Frank Mfg. Co.  
 Halperin, A. E., Co., Inc.  
 Industrial Products Co.  
 Karel First Aid Supply Co.  
 Kennedy-Ingalls, V. E., Co.  
 McDonald, B. F., Co.  
 Medical Supply Co.  
 Mine Safety Appliances Co.  
 New Jersey Safety Equipment Co.  
 Pac-Kit Co.  
 Safety Clothing & Equipment Co.  
 Safety First Supply Co.  
 Seeco Safety Products Co.

### First Aid Materials

Aloe, A. S., Co.  
 Bongardner Mfg. Co.  
 Bullard, E. D., Co.  
 Chesbrough Mfg. Co.  
 Davis Emergency Equip. Co., Inc.  
 Fisher Scientific Co.  
 General Bandages, Inc.  
 Halperin, A. E., Co., Inc.  
 Industrial Products Co.  
 Karel First Aid Supply Co.  
 Kennedy-Ingalls, V. E., Co.  
 Kip, Inc.  
 McDonald, B. F., Co.  
 McDowell Mfg. Co.  
 Medical Supply Co.  
 Mine Safety Appliances Co.  
 Pac-Kit Co.  
 Pulmosan Safety Equipment Corp.  
 Reece Wooden Sole Shoe Co.  
 Safety Clothing & Equipment Co.  
 Safety First Supply Co.  
 Seeco Safety Products Co.

To locate Advertisements, see Advertisers' Index.



## classified safety product index

### First Aid Room Equipment

Aloe, A. S., Co.  
Romgardner Mfg. Co.  
Rullard, E. D., Co.  
Davis Emergency Equipment Co.  
E & J Mfg. Co.  
Halperin, A. E., Co., Inc.  
Industrial Products Co.  
Karel First Aid Supply Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seo Safety Products Co.

### First Aid Trainer

Karel First Aid Supply Co.  
Safety First Supply Co.

### Flags, Danger

Central Safety Equipment Co.  
Charleston Rubber Co.  
Eastern Metal of Elmira, Inc.  
Genter, C. D., Co.  
Industrial Products Co.  
McDonald, B. F., Co.  
New Jersey Safety Equipment Co.  
Overton, R. B., Co. (Mfrs. Elkay Safety Signals)  
Prairie State Products Co.  
Ready Made Sign Co., Inc.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seo Safety Products Co.  
Stonehouse Signs, Inc.

### Flags, Safety

Charleston Rubber Co.  
Eastern Metal of Elmira, Inc.  
Genter, C. D., Co.  
Industrial Products Co.  
National Safety Council - Part 2  
New Jersey Safety Equipment Co.  
Overton, R. B., Co.  
Prairie State Products Co.  
Ready Made Sign Co., Inc.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seo Safety Products Co.  
Vari-Products Co.

### Flame Retardant for Fabrics

Central Safety Equipment Co.  
duPont, E. I., de Nemours & Co., Inc.  
Flamort Chemical Co.  
Frommelt Industries  
McDonald, B. F., Co.  
New Jersey Safety Equipment Co.  
Wheeler Protective Apparel, Inc.

### Flashlight Batteries

Bullard, E. D., Co.  
Genter, C. D., Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seo Safety Products Co.

### Flashlights

American Allsafe Co., Inc.  
Browne, Stewart R., Mfg. Co., Inc.  
Bullard, E. D., Co.  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
Hornik, Frederick  
Justrite Mfg. Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seo Safety Products Co.

### Flashlights, Permissible

American Allsafe Co., Inc.  
Browne, Stewart R., Mfg. Co., Inc.  
Davis Emergency Equip. Co., Inc.  
Justrite Mfg. Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

### Floodlights, Emergency

American Allsafe Co., Inc.  
American-LaFrance-Foamite Corp.  
Browne, Stewart R., Mfg. Co., Inc.  
Electric Cord Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pyle-National Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seo Safety Products Co.  
U-C Lite Mfg. Co.

### Floor Cleaning Machines, Electric

Dameron Enterprises, Inc.  
Finnell System, Inc.  
Handling Devices Co., Inc.  
Hild Floor Machine Co., Inc.  
Hillyard Chemical Co.  
Huntington Laboratories, Inc.  
Kent Co., Inc.  
Lincoln-Schlueter Floor Machs. Co.  
Tennant, G. H., Co.  
Vestal, Inc.  
West Disinfecting Co.

### Floor Coating, Conductive,

#### Non-Slip

Associated Just Dstrs., Inc.  
Conductive Hospital Access Corp.  
Costantini Corp.  
Eagle-Picher Co.  
Federal Flooring Corp.  
Flintkote Co.  
Fuld Bros., Inc.  
Hallemite Mfg. Co.  
Hild Floor Machine Co.  
Huntington Laboratories, Inc.  
Kelley-Mahoney Co.  
Legge, Walter G., Co., Inc.  
Magnus Chemical Co., Inc.  
Vestal, Inc.

### Floor Finishing Compounds

Associated Just Dstrs., Inc.  
Brulin & Co., Inc.  
Dolge, C. R., Co.  
duPont, E. I., de Nemours & Co., Inc.  
Finnell System, Inc.  
Franklin Research Co.  
Hild Bros., Inc.  
Hild Floor Machine Co.  
Hillyard Chemical Co.  
Huntington Laboratories, Inc.  
Legge, Walter G., Co., Inc.  
Magnus Chemical Co., Inc.  
Master Builders Co.  
Masury-Young Co.  
Miracle Adhesive Corp.  
Pittsburgh Plate Glass Co.  
Tennant, G. H., Co.  
Vestal, Inc.  
West Disinfecting Co.

### Floor Plate, Abrasive

Alan Wood Steel Co.  
American Abrasive Metals Co.

### Floor Plate, Steel

Alan Wood Steel Co.  
American Allsafe Co., Inc.  
Globe Co., Grip-Strut Div.  
Inland Steel Co.  
Jones & Laughlin Steel Corp.  
United States Steel Corp.

### Flooring Materials, Safety

Alan Wood Steel Co.  
American Abrasive Metals Co.  
Bustin Steel Products, Inc.  
Dameron Enterprises, Inc.  
Eagle-Picher Co.  
Finnell System, Inc.  
Flintkote Co.  
Globe Co., Grip-Strut Div.  
Hallemite Mfg. Co.  
Klemp Metal Grating Corp.  
Legge, Walter G., Co., Inc.  
Master Builders Co.  
Masury-Young Co.  
Melflex Products Co.  
Miller Products Co., Inc.  
Miracle Adhesives Corp.  
Permamix Corp.

### Fluorescent Tube Disposal

Ladbury Co., Inc.  
New Jersey Safety Equipment Co.  
Standard Safety Equipment Co.

### Fog Guns

Bean, John, Div. Food Machine & Chemical Corp.  
Cardox Corp.  
Central Safety Equipment Co.  
Genter, C. D., Co.  
Seo Safety Products Co.

### Fog-Nozzle

Akron Brass Mfg. Co.  
Allen, W. D., Mfg. Co.  
"Automatic" Sprinkler Corp. of America  
Bean, John, Div. Food Machine & Chemical Corp.  
Blaw-Knox Co.  
Cardox Corp.  
Central Safety Equipment Co.  
Genter, C. D., Co.  
Safety First Supply Co.  
Seo Safety Products Co.

### Fog Pumps

Bean, John, Div. Food Machine & Chemical Corp.  
Seo Safety Products Co.

### Food Carriers

Karel First Aid Supply Co.  
Vacuum Can Co.

### Foot Guards

American Allsafe Co., Inc.  
Duon Products Co.  
Edwood Safety Appliance Co.  
Industrial Gloves Co.  
Industrial Products Co.  
New Jersey Safety Equipment Co.  
Pulmosan Safety Equipment Corp.  
Reece Wooden Shoe Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Searjeant Metal Products, Inc.  
Wheeler Protective Apparel, Inc.

### Foot Mats, Disinfecting

McDonald, B. F., Co.  
Sanl-Mat, Inc.

### Foot Mats, Skin-Toughening

Onox, Inc.

### Fuller's Earth

Dri-Rite Co.  
Tanna Industries, Inc.

### Fume Collectors

Fisher Scientific Co.  
Johnson-March Corp.  
Mine Safety Appliances Co.  
Oxy-Catalyst, Inc.  
Ruemelin Mfg. Co.  
Safety First Supply Co.  
Schnieble, Claude R., Co.  
Wheelabrator Corp.

### Fumigants

Associated Just Dstrs., Inc.  
Dolge, C. R., Co.  
Dow Chemical Co.  
duPont, E. I., de Nemours & Co., Inc.  
Fuld Bros., Inc.  
Huntington Laboratories, Inc.  
West Disinfecting Co.

### Fungicides

Associated Just Dstrs., Inc.  
Dolge, C. R., Co.  
Dow Chemical Co.  
duPont, E. I., de Nemours & Co., Inc.  
Fuld Bros., Inc.  
Huntington Laboratories, Inc.  
Onox, Inc.  
Pittsburgh Plate Glass Co.  
Vestal, Inc.  
West Disinfecting Co.

### Fuse Pullers

Pulmosan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

## G

### Gage Glasses

American Industrial Safety Equip. Co.  
Duckson Corp.  
Safety Clothing & Equipment Co.  
Sellstrom Mfg. Co.

### Gastester

Davis Emergency Equipment Co., Inc.  
Johnson-Williams, Inc.  
Kruger, Harold, Instruments

### Germicides

Dameron Enterprises, Inc.  
Diversey Corp.  
Dolge, C. R., Co.  
Dow Chemical Co.  
Halperin, A. E., Co., Inc.  
Huntington Laboratories, Inc.  
Karel First Aid Supply Co.  
Vestal, Inc.  
West Disinfecting Co.  
Willson Products, Inc.

### Glass, Safety

Chicago Eye Shield Co.  
Duckson Corp.  
Fendall Co.  
Fibre-Metal Products Co.  
Genter, C. D., Co.  
Industrial Products Co.  
McDonald, B. F., Co.  
New Jersey Safety Equipment Co.  
Pittsburgh Plate Glass Co.  
Safety Clothing & Equipment Co.  
Scientific Industrial Supply Co.  
Sellstrom Mfg. Co.  
Standard Glove Co.  
U. S. Safety Service Co.  
Wallace Optical Co., Inc.

### Glass, Welding Plates

#### and Lenses

American Optical Co.  
Bausch & Lomb Optical Co.  
Chicago Eye Shield Co.  
Davis Emergency Equip. Co., Inc.  
Duckson Corp.  
Fendall Co.  
Fibre-Metal Products Co.  
Genter, C. D., Co.  
Jackson Products, Inc.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Mitchell Mfg. Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Sellstrom Mfg. Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
U. S. Safety Service  
Wallace Optical Co., Inc.  
Watchemoket Optical Co.  
Welsh Mfg. Co.  
Willson Products, Inc.

### Glove, Reclaiming

Scientific Industrial Supply Co.  
Wash-Rite Co., Inc.

### Gloves and Mittens

Advance Glove Mfg. Co.  
Aljay Mfg. Co.

See directory of Safety Equipment Sources for addresses.

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American Allsafe Co., Inc.  
American Industrial Safety Equip. Co.  
American Optical Co.  
American Rubberizing Co.  
Bashlin, W. M., Co.  
Davids Gloves, Inc.  
Dunn Products  
Edmont Mfg. Co.  
Eisendrath Glove Co.  
Fibre-Metal Products Co.  
Fisher Scientific Co.  
Gebhardt, A. L., Co.  
General Scientific Equipment Co.  
Genter, C. D., Co.  
Goodyear Industrial Products Co., Inc.  
Granet Corp.  
Holtcomb Safety Garment Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Jomac, Inc.  
Kennedy-Ingalls, V. E., Co.  
Kimball Safety Products  
Kuntz Glove Co.  
McDonald, B. F., Co.  
Miller Equipment Co.  
Miller Products Co., Inc.  
Mine Safety Appliances Co.  
Olympic Glove Co., Inc.  
Pulmonan Safety Equipment Corp.  
Racine Glove Co., Inc.  
Record Industrial Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Seo Safety Products Co.  
Sieberling Latex Prods. Co.  
Singer Glove Mfg. Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Surety Rubber Co.  
Wheeler Protective Apparel, Inc.  
Wickman Glove Co.

### Gloves, Linemen's Protector

Advance Glove Mfg. Co.  
American Allsafe Co., Inc.  
Bashlin, W. M., Co.  
Charleston Rubber Co.  
Davids Gloves, Inc.  
Davis Emergency Equip. Co., Inc.  
Dunn Products  
Gebhardt, A. L., Co.  
Genter, C. D., Co.  
Goodyear Industrial Products Co., Inc.  
Industrial Gloves Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Miller Products Co., Inc.  
Mine Safety Appliances Co.  
Olympic Glove Co., Inc.  
Racine Glove Co., Inc.  
Record Industrial Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Salisbury, W. H., & Co.  
Scientific Industrial Supply Co.  
Seo Safety Products Co.  
Singer Glove Mfg. Co.  
Standard Glove Co.  
Wickman Glove Co.

### Gloves, Rubber or Synthetic

Advance Glove Mfg. Co.  
American Allsafe Co., Inc.  
American Optical Co.  
American Rubberizing Co.  
Brossard, Lester L., Co.  
Charleston Rubber Co.  
Davids Gloves, Inc.  
Dunn Products  
Edmont Mfg. Co.  
Fisher Scientific Co.  
Gebhardt, A. L., Co.  
Genter, C. D., Co.  
Goodyear Industrial Products Co., Inc.  
Granet Corp.  
Hood Rubber Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Milburn Co.  
Miller Products Co., Inc.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Olympic Glove Co., Inc.  
Pioneer Rubber Co.  
Pulmonan Safety Equipment Corp.  
Record Industrial Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Seo Safety Products Co.  
Singer Glove Mfg. Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Surety Rubber Co.  
Wilson Rubber Co.

### Goggle Cleaner

American Allsafe Co., Inc.  
American Optical Co.  
Brossard, Lester L., Co.  
Buckley Corp.  
Carhoff Co.  
Dow Corning Corp.  
Fendall Co.  
Genter, C. D., Co.  
Huntington Laboratories, Inc.  
Industrial Products Co.  
Karel First Aid Supply Co.  
Kennedy-Ingalls, V. E., Co.  
Kimberly-Clark Corp.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.

Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seo Safety Products Co.  
Sellstrom Mfg. Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
U. S. Safety Service Co.  
Wilkins Co., Inc.

### Goggle Cleaning Dispensers

American Allsafe Co., Inc.  
American Optical Co.  
Buckley Corp.  
Carhoff Co.  
Dow Corning Corp.  
Fendall Co.  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
Industrial Products Co.  
Karel First Aid Supply Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seo Safety Products Co.  
Silicone Paper Co. of America  
Standard Glove Co.  
Standard Safety Equipment Co.  
U. S. Safety Service Co.  
Wilkins Co., Inc.

### Goggle Valves

Bailey, W. M., Co.

### Goggles

American Industrial Safety Equip. Co.  
American Optical Co.  
Bausch & Lomb Optical Co.  
Brossard, Lester L., Co.  
Chicago Eye Shield Co.  
Cover, H. S., Co.  
Davids Gloves, Inc.  
Deckson Corp.  
Fendall Co.  
Fibre-Metal Products Co.  
Fisher Scientific Co.  
Halperin, A. E., Co., Inc.  
Industrial Products Co.  
Jackson Products, Inc.  
Jones & Co.  
Kennedy-Ingalls, V. E., Co.  
Kimball Safety Products  
McDonald, B. F., Co.  
Mitchell Mfg. Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pioneer Scientific Corp.  
Plasco Safety Products Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Seo Safety Products Co.  
Sellstrom Mfg. Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Wallace Optical Co., Inc.  
Watchmoke Optical Co.  
Welsh Mfg. Co.  
Wilson Products, Inc.

### Gongs, Sirens, Horns and other

Signaling Devices  
"Automatic" Sprinkler Corp.  
of America  
Falcon Alarm Co., Inc.  
Genter, C. D., Co.  
Safety First Supply Co.  
Seo Safety Products Co.

### Gratings, Safety

American Abrasive Metals Co.  
Blaw-Knox Co.  
Boyer-Campbell Co., The  
Bustin Steel Products, Inc.  
Globe Co.  
Klemp Metal Grating Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Wood, Alan, Steel Co.

### Grinders, Tool

Scheer Co., Inc.

### Grounding Device, Electronic

Gilbert & Barker Mfg. Co.

### Guard Materials

Brossard, Lester L., Co.  
Falcon Alarm Co., Inc.  
Globe Co., Grip-Strut Div.  
Safety First Supply Co.

### Guards, All-Steel, Corner

Randolph Indust. Equip. Co.

### Guards, Chip and Spark

Industrial Products Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Searjeant Metal Products Co., Inc.  
Standard Safety Equipment Co.

### Guards for Edged Tools

Bashlin, W. M., Co.  
Bohrke, R. H., Co.  
DeWalt, Inc.  
Safety First Supply Co.

### Guards, Fan

Rochester Safety Equipment Co.  
Scientific Industrial Supply Co.

### Guards, Foot and Toe

Advance Glove Mfg. Co.  
American Allsafe Co., Inc.  
Elwood Safety Appliance Co.  
Industrial Gloves Co.  
Industrial Products Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
Pulmonan Safety Equipment Corp.  
Reese Wooden Sole Shoe Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Searjeant Metal Products Co., Inc.  
Seo Safety Products Co.  
Standard Safety Equipment Co.  
Wheeler Protective Apparel, Inc.

### Guards, Gear

Pulmonan Safety Equipment Corp.  
Safety First Supply Co.  
Searjeant Metal Products Co., Inc.  
Sury Mfg. Co.

### Guards, Glass Gage

Safety Clothing & Equipment Co.

### Guards, Grinders Portable

American Allsafe Co., Inc.  
Boyer-Campbell Co.  
Brossard, Lester L., Co.  
Genter, C. D., Co.  
Industrial Products Co.  
Morrison Products, Inc.  
Searjeant Metal Products Co., Inc.

### Guards, Grinding Wheel

American Allsafe Co., Inc.  
Central Safety Equipment Co.  
Chicago Eye Shield Co.  
Industrial Products Co.  
Junkin Safety Appliances Co., Inc.  
McDonald, B. F., Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Searjeant Metal Products Co., Inc.  
Seo Safety Products Co.  
Standard Safety Equipment Co.  
Sury Mfg. Co.

### Guards, Guide Pin

Boyer-Campbell Co.  
Central Safety Equipment Co.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Wiesman Mfg. Co.

### Guards, Jointer

American Allsafe Co., Inc.  
DeWalt, Inc.  
Industrial Products Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seo Safety Products Co.  
Standard Safety Equipment Co.  
Sury Mfg. Co.

### Guards, Kick Press

New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Searjeant Metal Products Co., Inc.  
Sury Mfg. Co.

### Guards, Lathe

Globe Co., Grip-Strut Div.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Searjeant Metal Products Co., Inc.  
Sury Mfg. Co.

### Guards, Milling Machine

Globe Co., Grip-Strut Div.  
New Jersey Safety Equipment Co.  
Searjeant Metal Products Co., Inc.

### Guards, Planer

Globe Co., Grip-Strut Div.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Searjeant Metal Products Co., Inc.  
Sury Mfg. Co.

### Guards, Platen Press

Bullard, E. D., Co.  
Magline Inc.  
Micro Switch - Div. of Minneapolis  
Honeywell Regulator Co.  
Safety Clothing & Equipment Co.  
Sury Mfg. Co.

### Guards, Portable Lamp

Browne, Stewart R., Mfg. Co., Inc.  
Electric Cord Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
Sury Mfg. Co.  
U-C Lite Mfg. Co.

### Guards, Power Press

American Allsafe Co., Inc.  
Boyer-Campbell Co.  
Bullard, E. D., Co.  
Electronic Control Corp.  
Globe Co., Grip-Strut Div.  
Junkin Safety Appliances Corp.  
Littell, F. J., Machine Co.

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## classified safety product index

Magline Inc.  
Micro Switch - Div. of Minneapolis  
Honeywell Regulator Co.  
New Jersey Safety Equipment Co.  
Positive Safety Mfg. Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Schrader's, A. Son Div. of  
Seoville Mfg. Co., Inc.  
Searjeant Metal Products, Inc.  
Seco Safety Products Co.  
Surtly Mfg. Co.  
Wiesman Mfg. Co.

### Guards, Power Shear

Bullard, E. D., Co.  
Electronic Control Corp.  
Globe Co., Grip-Strut Div.  
Micro Switch - Div. of Minneapolis  
Honeywell Regulator Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Schrader's, A. Son Div. of  
Seoville Mfg. Co., Inc.  
Searjeant Metal Products, Inc.  
Surtly Mfg. Co.

### Guards, Saw

American Allsafe Co., Inc.  
Bashlin, W. M., Co.  
Brett Guard Co.  
Buhke, R. H., Co.  
DeWalt, Inc.  
Genter, C. D., Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
New Jersey Safety Equipment Co.  
Newton Engineering Service  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Searjeant Metal Products, Inc.  
Standard Safety Equipment Co.  
Surtly Mfg. Co.

### Guards, Shaper

DeWalt, Inc.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Searjeant Metal Products, Inc.  
Surtly Mfg. Co.

### Guards, Shin

Advance Glove Mfg. Co.  
American Allsafe Co., Inc.  
Ellwood Safety Appliance Co.  
Genter, C. D., Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

### Guards, Wire

Gerts-Lite Co.  
Safety First Supply Co.

### Gutters, Door Rain

Dazze Products, Inc.

## H

### Hair Guards

Associated Rag & Apron Co.  
Boyer-Campbell Co.  
Brossard, Lester L., Co.  
Chic-Maid Hat Mfg. Co., Inc.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Standard Glove Co.  
Standard Safety Equipment Co.

### Hand Cream, Protective

Advance Glove Mfg. Co.  
American Allsafe Co., Inc.  
Ayerst Laboratories  
Boyer-Campbell Co.  
Breck, John H., Inc.  
Brossard, Lester L., Co.  
Bullard, E. D., Co.  
Cadet Laboratories  
Chemical Corp.  
Davis Emergency Equip. Co., Inc.  
Dolge, C. B., Co.  
D. R. S. Labs.  
DuPont, E. I., de Nemours & Co., Inc.  
Fisher Scientific Co.  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
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Hygiene Research Co.  
Industrial Products Co.  
Karel First Aid Supply Co.  
Kennedy-Ingalls, V. E., Co.  
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McDonald, B. F., Co.  
Milburn Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pittsburgh Plate Glass Co.  
Quikkee Products, Inc.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.  
Siladern Laboratories  
Standard Glove Co.

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Wallace Optical Co., Inc.  
West Disinfecting Co.

### Hand Guards

Boyer-Campbell Co.  
Holcomb Safety Garment Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Jomac, Inc.  
Kennedy-Ingalls, V. E., Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Wheeler Protective Apparel, Inc.

### Handlines

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Industrial Products Co.  
Klein, Mathias, & Sons  
Seco Safety Products Co.

### Hand Pumps

Blackmer Pump Co.  
Huntington Laboratories, Inc.  
Smith, D. B., & Co., Inc.  
Tokheim Corp.

### Hangers, Lamp Lowering

Thompson Electric Co.

### Harness, Industrial Safety

Bashlin, W. M., Co.  
Buhke, R. H., Co.  
Davis Emergency Equip. Co., Inc.  
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Industrial Products Co.  
Industrial Safety Belt Co.  
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Rose Mfg. Co.  
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Seco Safety Products Co.  
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Wind-Kor Automatic Safety Device Co.

### Hat Liner

Bashlin, W. M., Co.  
Boyer-Campbell Co.  
Brossard, Lester L., Co.  
Bullard, E. D., Co.  
Davis Emergency Equip. Co., Inc.  
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Genter, C. D., Co.  
Industrial Products Co.  
Jackson Products, Inc.  
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Mine Safety Appliances Co.  
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Scientific Industrial Supply Co.  
Seco Safety Products Co.  
Standard Safety Equipment Co.  
Wallace Optical Co., Inc.  
Willson Products, Inc.

### Hats and Caps, Safety

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Bullard, E. D., Co.  
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Dockson Corp.  
Fibre-Metal Products Co.  
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Genter, C. D., Co.  
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Industrial Gloves Co.  
Industrial Products Co.  
Jackson Products, Inc.  
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Beltone Hearing Aid Co.

### Heating Pads

Interstate Rubber Products Co.  
Karel First Aid Supply Co.  
Mine Safety Appliances Co.  
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American-LaFrance-Foamite Co.  
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Fibre-Metal Products Co.  
Genter, C. D., Co.  
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Industrial Products Co.  
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Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Seco Safety Products Co.  
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Standard Safety Equipment Co.  
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Bullard, E. D., Co.  
Chicago Eye Shield Co.  
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Dockson Corp.  
Fendall Co.  
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Genter, C. D., Co.  
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Kimball Safety Products  
McDonald, B. F., Co.  
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Willson Products, Inc.

### Hoisting Buckets

Buhrke, R. H., Co.  
Industrial Products Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

### Hoists, Chain

Columbus-McKinnon Chain Corp.  
Robbins & Myers, Inc.  
Wright Hoist Div. American  
Chain & Cable Co.

### Hoods, Acid

Advance Glove Mfg. Co.  
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Safety First Supply Co.  
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Standard Safety Equipment Co.  
Wagoo Products, Inc.

### Hoods, Dust

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Dockson Corp.  
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General Scientific Equipment Co.  
Genter, C. D., Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Milburn Co.  
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New Jersey Safety Equipment Co.  
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Standard Glove Co.  
Standard Safety Equipment Co.  
Wagoo Products, Inc.  
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Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
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New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Standard Safety Equipment Co.

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Wheeler Protective Apparel, Inc.

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Safety Clothing & Equipment Co.  
Taylor, S. G., Chain Co.  
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**Hooks, Safety Belt**

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McDonald, B. F., Co.  
Mine Safety Appliances Co.  
Pulmosan Safety Equipment Corp.  
Rose Mfg. Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

**Hose, Lines**

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Miller Products Co., Inc.  
Salisbury, W. H., & Co.

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Miller Products Co., Inc.  
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Halperin, A. E., Co., Inc.  
Hillyard Chemical Co.  
Industrial Products Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
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Brady, W. H., Co.  
Matthews, Jas. H., & Co.  
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**Inclinators, Carboy**

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Industrial Products Co.  
Pulmosan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

**Indicators, Carbon Monoxide**

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Davis Emergency Equip. Co., Inc.  
Fisher Scientific Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Taller & Cooper, Inc.  
U. S. Safety Service Co.

**Indicators, Flammable Vapors**

Davis Emergency Equip. Co., Inc.  
Johnson-Williams Inc.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Safety First Supply Co.  
Taller & Cooper, Inc.

**Indicators, Gas**

Bullard, E. D., Co.  
Davis Emergency Equip. Co., Inc.  
Johnson-Williams Inc.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
National Mine Service Co.  
New Jersey Safety Equipment Co.  
Safety First Supply Co.  
Taller & Cooper, Inc.  
U. S. Safety Service Co.

**Indicators, Oxygen Deficiency**

Davis Emergency Equip. Co., Inc.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.

**Industrial Sound Control**

Beltone Hearing Aid Co.  
Hansson, Elof, Inc.  
Industrial Acoustics Co., Inc.  
Industrial Sound Control  
Mine Safety Appliances Co.  
Scott, Herman Hoemer, Inc.

**Inhalators**

Bongardner Mfg. Co.  
Davis Emergency Equip. Co., Inc.  
E & J Mfg. Co.  
Emergency Oxygen Inhalators, Inc.  
Emerson, J. H., Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmosan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scott Aviation Corp.  
Stephenson Corp.

**Insecticides**

Associated Just Distrib., Inc.  
Brulin & Co., Inc.  
Diversey Corp.  
Doige, C. B., Co.  
Dow Chemical Co.  
DuPont, E. I., de Nemours & Co., Inc.  
Finnell System, Inc.  
Fuld Bros., Inc.  
Hillyard Chemical Co.  
Huntington Laboratories, Inc.  
West Disinfecting Co.

**Insect Repellent**

Associated Just Distrib., Inc.  
Bullard, E. D., Co.  
Carbide & Carbon Chemicals Co.  
Fuld Bros., Inc.  
Halperin, A. E., Co., Inc.  
I. D. U. Products Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Medical Supply Co.  
Mine Safety Appliances Co.

**Insoles**

Bullard, E. D., Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
Rubberhide Co., Inc.  
Safety Clothing & Equipment Co.

**Insulators, Stools**

Salisbury, W. H., & Co.

**Insulated Mobile Electrification**

Insul-8-Corp.

**Insurance**

Employers Mutual of Wausau

**K****Keys, Safety Chuck**

Lindstrom Mfg. Co.

**Knives, Safety**

Flash Box Opener Co.

**L****Labels, Adhesive**

American Allsafe Co., Inc.  
Brady, W. H., Co.  
Chart-Pak, Inc.  
Custanite Corp.  
Fisher Scientific Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Westline Products Div.

**Ladder Climbers**

Rose Mfg. Co.

**Ladder Shoes or Feet**

Aluminum Ladder Co.  
American Allsafe Co., Inc.  
American Optical Co.  
Dayton Safety Ladder Co.  
Genter, C. D., Co.  
Goshen Mfg. Co., Inc.  
H-B Industries, Inc.  
Industrial Products Co.  
Johnson Ladder Shoe Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
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Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Newton Engineering Service  
Patent Scaffolding Co., Inc.  
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Rose Mfg. Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Seeco Safety Products Co.  
Standard Safety Equipment Co.

**Ladders, Aluminum**

Aluminum Ladder Co.

Baltimore Co.  
Bullard, E. D., Co.  
Genter, C. D., Co.  
Louisville Ladder Co.  
McDonald, B. F., Co.  
Patent Scaffolding Co., Inc.  
Pittsburgh Plate Glass Co.  
Roll-Away Truck Mfg. Co., Inc.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.

**Ladders, Rolling**

Aluminum Ladder Co.  
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Cramer Posture Chair Co.  
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Pittsburgh Plate Glass Co.  
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Scientific Industrial Supply Co.

**Ladders, Safety**

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American Allsafe Co., Inc.  
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Bullard, E. D., Co.  
Bustin Steel Products, Inc.  
Cotterman, I. D.  
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Genter, C. D., Co.  
Goshen Mfg. Co., Inc.  
Patent Scaffolding Co., Inc.  
Pittsburgh Plate Glass Co.  
Roll-Away Truck Mfg. Co., Inc.  
Scientific Industrial Supply Co.  
Seeco Safety Products Co.

**Ladders, Tower Safety**

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Safway Steel Products, Inc.

**Lamp Guards**

Browne, Stewart R., Mfg. Co., Inc.  
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General Scientific Equipment Co.  
Gies-A-Lite Co.  
Industrial Products Co.  
Standard Safety Equipment Co.  
U-C Lite Mfg. Co.

**Lamp Hangers**

Thompson Electric Co.

**Lamp Shock Absorbers**

Thompson Electric Co.

**Lamps, Adjustable**

Electric Cord Co.  
Fostoria Pressed Steel Corp.  
Luxo Lamp Corp.  
Swivelier Co., Inc.

**Lamps, Electric**

Davis Emergency Equip. Co., Inc.  
Luxo Lamp Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.

**Lamps, Emergency**

American Optical Co.  
Dual-Lite Co.  
Electric Cord Co.  
Exide Industrial Div., Electric  
Storage & Battery Co.  
Karel First Aid Supply Co.  
Pyle-National Co.  
U-C Lite Mfg. Co.

**Lamps, Explosion Proof**

Browne, Stewart R., Mfg. Co., Inc.  
Electric Cord Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
New Jersey Safety Equipment Co.  
Pyle-National Co.  
Safety Clothing & Equipment Co.  
U-C Lite Mfg. Co.

**Lamps, Extension**

Browne, Stewart R., Mfg. Co., Inc.  
Electric Cord Co.  
Industrial Products Co.  
Luxo Lamp Corp.  
McGill Mfg. Co.

**Lamps, Miners'**

Bullard, E. D., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
National Mine Service Co.

**Lamps, Portable Electric**

Browne, Stewart R., Mfg. Co., Inc.  
Industrial Products Co.  
Justite Manufacturing Co.  
Luxo Lamp Corp.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pyle-National Co.  
Safety First Supply Co.  
Sittler Corp.  
U-C Lite Mfg. Co.

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### Lamps, Safety

Browne, Stewart R. Mfg. Co., Inc.  
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Industrial Products Co.  
Justrite Mfg. Co.  
McDonald, R. F., Co.  
Mine Safety Appliances Co.  
National Mine Service Co.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
U-C Lite Mfg. Co.

### Lanterns, Carbide

Justrite Mfg. Co.  
Safety Clothing & Equipment Co.

### Lanterns, Electric

Electric Cord Co.  
Industrial Products Co.  
Justrite Mfg. Co.  
McDonald, R. F., Co.  
Safety Clothing & Equipment Co.  
U-C Lite Mfg. Co.

### Lanyards

Bashlin, W. M., Co.  
Buhke, R. H., Co.  
Genter, C. D., Co.  
Industrial Products Co.  
McDonald, R. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.

### Leathers, Hand

Advanced Glove Mfg. Co.  
Aljay Mfg. Co.  
American Allsafe Co., Inc.  
Boyer-Campbell Co.  
Davida Gloves, Inc.  
Gebhardt, A. L., Co.  
Genter, C. D., Co.  
Holcomb Safety Garment Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, R. F., Co.  
Mine Safety Appliances Co.  
Olympic Glove Co., Inc.  
Piasco Safety Products Co.  
Pulmonan Safety Equipment Corp.  
Racine Glove Co., Inc.  
Record Industrial Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
U. S. Safety Service Co.  
Wheeler Protective Apparel, Inc.

### Leather Preserver,

#### Water Repellent

American Allsafe Co., Inc.  
Bullard, E. D., Co.  
Dow Corning Corp.  
duPont, E. I., de Nemours & Co., Inc.  
Gebhardt, A. L., Co.  
Genter, C. D., Co.  
Industrial Gloves Co.  
McDonald, R. F., Co.  
Record Industrial Co.  
Rochester Safety Equipment Co.  
Standard Glove Co.  
Standard Safety Equipment Co.

### Leather, Safety Clothing

Advance Glove Mfg. Co.  
Aljay Mfg. Co.  
American Allsafe Co., Inc.  
Associated Bag & Apron Co.  
Boyer-Campbell Co.  
Brossard, Lester L., Co.  
Davida Gloves, Inc.  
Fibre-Metal Products Co.  
Gebhardt, A. L., Co.  
General Spill Corp.  
Genter, C. D., Co.  
Holcomb Safety Garment Co.  
Industrial Gloves Co.  
Industrial Products Co.  
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Kimball Safety Products  
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Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Wheeler Protective Apparel, Inc.

### Leggings

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American Allsafe Co., Inc.  
Associated Bag & Apron Co.  
Boyer-Campbell Co.  
Davida Gloves, Inc.  
Ellwood Safety Appliance Co.  
Genter, C. D., Co.  
Goodyear Industrial Products Co., Inc.  
Holcomb Safety Garment Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
Kimball Safety Products  
McDonald, R. F., Co.  
Miller Products Co., Inc.  
Mine Safety Appliances Co.  
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Piasco Safety Products Co.  
Pulmonan Safety Equipment Corp.

Racine Glove Co., Inc.  
Record Industrial Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Sawyer, H. M., & Son Co.  
Scientific Industrial Supply Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Wheeler Protective Apparel, Inc.

### Lens Cleaner

American Allsafe Co., Inc.  
Brossard, Lester L., Co.  
Buckley Corp.  
Dow Corning Corp.  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
Huntington Laboratories, Inc.  
Industrial Products Co.  
Karel First Aid Supply Co.  
Kennedy-Ingalls, V. E., Co.  
Kimberly-Clark Corp.  
McDonald, R. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Silicone Paper Co. of America  
Scientific Industrial Supply Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
U. S. Safety Service Co.  
Vestal, Inc.  
Wallace Optical Co., Inc.  
Wilkins Co., Inc.  
Willson Products, Inc.

### Lens, Industrial

American Industrial Equipment Co.  
Bausch & Lomb Optical Co.  
Chicago Eye Shield Co.  
Duckson Corp.  
Fendall Co.  
Fibre-Metal Products Co.  
Genter, C. D., Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, R. F., Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Sellstrom Mfg. Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
U. S. Safety Service Co.  
Wallace Optical Co., Inc.  
Watchmoke Optical Co.  
Welsh Mfg. Co.  
Willson Products, Inc.

### Lens Inspection

Bausch & Lomb Optical Co.  
Genter, C. D., Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, R. F., Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Sellstrom Mfg. Co.

### Lens, Prescription

American Optical Co.  
Bausch & Lomb Optical Co.  
Chicago Eye Shield Co.  
Fendall Co.  
Genter, C. D., Co.  
Kimball Safety Products  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Sellstrom Mfg. Co.  
Standard Glove Co.  
U. S. Safety Service Co.  
Wallace Optical Co., Inc.  
Willson Products, Inc.

### Lifeline Lock for Scaffolds,

Swings  
Safety Tower Ladder Co.

### Lifters, Vacuum

Boyer-Campbell Co.  
Brossard, Lester L., Co.  
Genter, C. D., Co.  
Industrial Products Co.  
Littell, F. J., Machine Co.  
McDonald, R. F., Co.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Standard Glove Co.  
Standard Safety Equipment Co.

### Lifting Equipment

Boyer-Campbell Co.  
Economy Engineering Co.  
Industrial Products Co.

### Lifting Equipment, Industrial

Electric Cord Co.  
Karel First Aid Supply Co.  
Luxo Lamp Corp.  
McGill Mfg. Co.  
Safety Clothing & Equipment Co.  
Swiveller Co., Inc.

### Lighting, Outdoor

Electric Cord Co.  
Pyle-National Co.  
Swiveller Co., Inc.  
Thompson Electric Co.

### Lighting Units, Portable

Electric Cord Co.  
Karel First Aid Supply Co.  
Luxo Lamp Corp.

McDonald, R. F., Co.  
Safety First Supply Co.  
Swiveller Co., Inc.  
U-C Lite Mfg. Co.

### Lights Emergency, Battery

American Optical Co.  
Browne, Stewart R. Mfg. Co.  
Davis Emergency Equip. Co., Inc.  
Dual-Lite Co.  
Electric Cord Co.  
Emarco Corp.  
Exide Industrial Div., Electric  
Storage Battery Co.  
Justrite Mfg. Co.  
Karel First Aid Supply Co.  
McDonald, R. F., Co.  
Mine Safety Appliances Co.  
Prairie State Products Co.  
Seco Safety Products Co.  
U-C Lite Mfg. Co.  
Vari-Products Co.

### Lights, Emergency Vehicle

Bougardner Mfg. Co.  
Davis Emergency Equipment Co., Inc.  
Emarco Corp.  
Federal Sign & Signal Corp.  
Pyle-National Co.  
Sterling Siren Fire Alarm Co., Inc.  
Swiveller Co., Inc.  
U-C Lite Mfg. Co.  
Vari-Products Co.

### Lights, Warning

Browne, Stewart R. Mfg. Co., Inc.  
Davis Emergency Equipment Co., Inc.  
Electric Cord Co.  
Emarco Corp.  
Federal Sign & Signal Corp.  
Genter, C. D., Co.  
McDonald, R. F., Co.  
New Jersey Safety Equipment Co.  
Prairie State Signal Co.  
Pyle-National Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.  
U-C Lite Mfg. Co.  
Vari-Products Co.

### Line Hose

Salisbury, W. H., & Co.

### Line Markers

Brossard, Lester L., Co.  
Industrial Products Co.  
M-B Corp.  
New Jersey Safety Equipment Co.  
Standard Safety Equipment Co.

### Linemen's Rubber Protective

#### Devices

Charleston Rubber Co.  
Davis Emergency Equipment Co., Inc.  
Genter, C. D., Co.  
Goodyear Industrial Products Co., Inc.  
McDonald, R. F., Co.  
Miller Products Co., Inc.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Salisbury, W. H., & Co.  
Standard Glove Co.

### Linemen's Tools

Bashlin, W. M., Co.  
Klein, Mathias, & Sons  
Safety First Supply Co.

### Load Binders

Canton Mfg. Co.  
Laughlin, Thomas Div., American  
Hoist & Derrick Co.  
Texas Foundries

### Lockers and Hangers for Clothing

Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.

### Lock-Outs, Electric Switch

Osborn Mfg. Co.

## M

### Magnifiers

Bausch & Lomb Optical Co.  
Boyer-Campbell Co.  
Custanile Corp.  
Fisher Scientific Co.  
Halperin, A. E., Co., Inc.  
Industrial Products Co.  
Karel First Aid Supply Co.  
Kennedy-Ingalls, V. E., Co.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Sellstrom Mfg. Co.  
Wallace Optical Co., Inc.

### Maintenance Towers

Universal Mfg. Corp.

### Markers, Traffic Line

American Allsafe Co., Inc.  
Boyer-Campbell Co.  
Brady, W. H., Co.  
Brossard, Lester L., Co.  
Eastern Metals of Elmhurst, Inc.  
Industrial Products Co.  
M-B Corp.  
Miracle Adhesives Corp.  
Safety First Supply Co.  
Sargent-Sowell, Inc.  
Stonehouse Signs, Inc.  
Vari-Products Co.

See directory of Safety Equipment Sources for addresses.

# classified safety product index

## Masks, Abrasive Blasting

Bullard, E. D., Co.  
Fibre-Metal Products Co.  
Genter, C. D., Co.  
Industrial Products Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equip. Corp.  
Standard Glove Co.  
Wallace Optical Co., Inc.  
Willson Products, Inc.

## Masks, Acid Gas

Acme Protection Equipment Co.  
Davis Emergency Equipment Co., Inc.  
Genter, C. D., Co.  
Industrial Products Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scott Aviation Corp.  
Seo Safety Products Co.  
Standard Safety Equipment Co.  
Wallace Optical Co., Inc.  
Willson Products, Inc.

## Masks, All-Service

Acme Protection Equipment Co.  
Bullard, E. D., Co.  
Davis Emergency Equip. Co., Inc.  
Genter, C. D., Co.  
Industrial Products Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seo Safety Products Co.  
Standard Safety Equipment Co.  
Wallace Optical Co., Inc.  
Willson Products, Inc.

## Masks, Ammonia Gas

Acme Protection Equipment Co.  
Bullard, E. D., Co.  
Davis Emergency Equip. Co., Inc.  
Genter, C. D., Co.  
Industrial Products Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scott Aviation Corp.  
Seo Safety Products Co.  
Standard Safety Equipment Co.  
Wallace Optical Co., Inc.  
Willson Products, Inc.

## Masks, Babbitting

Chicago Eye Shield Co.  
Fibre-Metal Products Co.  
Industrial Products Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seo Safety Products Co.

## Masks, Carbon Monoxide

Acme Protection Equipment Co.  
Bullard, E. D., Co.  
Davis Emergency Equipment Co., Inc.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scott Aviation Corp.  
Seo Safety Products Co.  
Standard Safety Equipment Co.  
Willson Products, Inc.

## Masks, Hose (Fresh Air)

Acme Protection Equipment Co.  
Bullard, E. D., Co.  
Chicago Eye Shield Co.  
Davis Emergency Equipment Co., Inc.  
Fibre-Metal Products Co.  
Genter, C. D., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seo Safety Products Co.  
Standard Safety Equipment Co.  
Willson Products, Inc.

## Masks, Hose (Supplied Air)

Acme Protection Equipment Co.  
American Industrial Safety Equip. Co.  
Bullard, E. D., Co.  
Chicago Eye Shield Co.  
Davis Emergency Equipment Co., Inc.  
Fibre-Metal Products Co.  
Genter, C. D., Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scott Aviation Corp.  
Seo Safety Products Co.  
Standard Safety Equipment Co.

## Masks, Organic Vapor

Acme Protection Equipment Co.  
Bullard, E. D., Co.  
Chicago Eye Shield Co.  
Cover, H. S.  
Davis Emergency Equipment Co., Inc.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scott Aviation Corp.  
Willson Products, Inc.

## Matches, Safety

Diamond Match Co.

## Materials Handling Devices

Bongardner Mfg. Co.  
DeWalt, Inc.  
Economy Engineering Co.  
Franklin, Bernard, Co., Inc.  
Frommelt Industries  
General Machine & Welding Works, Inc.  
Industrial Products Co.  
Kensico Mfg. Co., Inc.  
Magline Inc.  
Merrill, Bros.  
New Jersey Safety Equipment Co.  
Rol-Away Truck Mfg. Co., Inc.  
Safety First Supply Co.

## Mats, Standing

American Mat Corp.  
Durable Mat Co.  
Genter, C. D., Co.  
Goodrich, B. F., Co.  
Goodyear Industrial Products Co., Inc.  
Industrial Products Co.  
Mellifex Products Co.  
Miller Products Co., Inc.  
New York Belting & Packing Co.  
Quabaug Rubber Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.

## Mats, Switchboard

Genter, C. D., Co.  
Goodyear Industrial Products Co., Inc.  
Industrial Products Co.  
Mellifex Products Co.  
Miller Products Co., Inc.  
New York Belting & Packing Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Salisbury, W. H., Co.  
U. S. Rubber Co.

## Matting, Floor and Stair

American Alsaf Co., Inc.  
Buxton Steel Products, Inc.  
Genter, C. D., Co.  
Goodrich, B. F., Co.  
Goodyear Industrial Products Co., Inc.  
Industrial Products Co.  
Klamp Metal Grating Corp.  
Mellifex Products Co.  
Miller Products Co., Inc.  
New York Belting & Packing Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
U. S. Rubber Co.  
Wear-Proof Mat Co.

## Mauls, Rubber

Johnson Ladder Shoe Co.

## Mauls, Wood

Safety First Supply Co.

## Mechanical Stirrup, Circulator

Albina Engine & Machine Works

## Message Repeater

Cousino, Inc.  
Mine Safety Appliances Co.

## Metal, Expanded

American Abrasive Metals Co.

## Meter, Sound-Survey

General Radio Co.  
Davis Safety Appliances Co.  
Scott, Herman, Hoemer, Inc.

## Mirrors, Plant Traffic

Brassard, Lester L., Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
New Jersey Safety Equipment Co.  
Silver Troy Mirror Co.

## Mobile First Aid Equipment

Bongardner Mfg. Co.  
Davis Emergency Equipment Co., Inc.  
Halperin, A. E., Co., Inc.  
Karel First Aid Supply Co.  
Mine Safety Appliances Co.

## Mop Trucks

Finnell System, Inc.  
Hild Floor Machine Co.

## Movers, Railway Car

Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Standard Safety Equipment Co.

## N

### Nets, Rope Safety

Bullard, E. D., Co.  
Genter, C. D., Co.  
Safety First Supply Co.

### Non Sparking Tools

Custanite Corp.  
Scientific Industrial Supply Co.

### Nozzles

Akron Brass Works, Inc.  
Allen, W. D., Mfg. Co.  
Automatic Sprinkler Corp. of America  
Genter, C. D., Co.  
Johnson March Corp.  
McIntire, F. N., Brass Works, Inc.  
Seo Safety Products Co.

## O

### Oil Cans, Long Handle

Scientific Industrial Supply Co.

### Oilers, Precision

Eagle Mfg. Co.

### Oxygen Breathing Apparatus

Aloe, A. S., Co.  
Bongardner Mfg. Co.  
Bullard, E. D., Co.  
Davis Emergency Equipment Co., Inc.  
E & J Mfg. Co.  
Genter, C. D., Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Safety First Supply Co.  
Stephenson Corp.

### Oxygen Recorders

Aloe, A. S., Co.  
Davis Emergency Equipment Co., Inc.  
Fisher Scientific Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
Safety First Supply Co.  
Taller & Cooper, Inc.

### Oxygen Therapy Apparatus

Aloe, A. S., Co.  
Davis Emergency Equipment Co., Inc.  
E & J Mfg. Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Safety First Supply Co.  
Scott Aviation Corp.  
Stephenson Corp.

## P

### Packs, Miners

Genter, C. D., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
Safety Clothing & Equipment Co.  
U. S. Rubber Co.

### Padlocks

Corbin Cabinet Lock Div.  
American Hardware Corp.  
Genter, C. D., Co.

### Pads, Knee

Advance Glove Mfg. Co.  
Allied Glove Co.  
American Alsaf Co., Inc.  
Boyer-Campbell Co.  
Genter, C. D., Co.  
Holcomb Safety Garment Co.  
Industrial Products Co.  
Industrial Safety Belt Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Standard Safety Equipment Co.  
Standard Glove Co.  
Wheeler Protective Apparel, Inc.

### Paint

DuPont, E. I., deNemours & Co., Inc.  
Frost Paint & Oil Corp.  
Kelley-Mahoney Co.  
Kennedy-Ingalls, V. E., Co.  
Magnus Chemical Co., Inc.  
Oil-Dri Corp. of America  
Pittsburgh Plate Glass Co.

### Paint, Abrasive Resurfacing

duPont, E. I., deNemours & Co., Inc.  
Frost Paint & Oil Corp.  
Genter, C. D., Co.  
Hallamite Mfg. Co.  
Kelley-Mahoney Co.  
Kennedy-Ingalls, V. E., Co.  
Legge, Walter G., Co., Inc.  
Magnus Chemical Co., Inc.  
McDonald, B. F., Co.  
Miracle Adhesives Corp.  
Scientific Industrial Supply Co.

To locate Advertisements, see Advertisers' Index.

## classified safety product index

### Paper Cups

Continental Can Co.  
Dixie Cup Co.  
Halperin, A. E., Co., Inc.  
Karel First Aid Supply Co.  
Medical Supply Co.  
Scientific Industrial Supply Co.  
U. S. Envelope Co.

### Parallels, Safety

Jerico

### Parts, Cleaning Equipment

Homestead Valve Mfg. Co.  
Magnus Chemical Co., Inc.  
Practical Mfg. Co.  
Tect, Inc.

### Partitions, Rolling

Kinnear Mfg. Co.

### Pipe Markers

American Allsafe Co., Inc.  
Brady, W. H., Co.  
Bullard, E. D., Co.  
Eastern Metals of Elmira, Inc.  
Industrial Products Co.  
Matthews, Jas. H., & Co.  
New Jersey Safety Equipment Co.  
Ready Made Sign Co., Inc.  
Standard Safety Equipment Co.  
Westline Products Div.  
Wilmington Plastics Co.

### Plastics for Shields and Guards

duPont, E. I., de Nemours & Co., Inc.  
Fibro-Metal Products Co.  
McDonald, B. F., Co.  
New Jersey Safety Equipment Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Searjeant Metal Products, Inc.  
Sellstrom Manufacturing Co.  
Standard Safety Equipment Co.  
Wilmington Plastics Co.

### Platforms, Scaffold

Albina Engine & Machine Corp.  
Aluminum Ladder Co.  
Atlas Industrial Corp.  
Economy Engineering Co.  
Globe Co., Grip-Strut Div.  
Goshen Mfg. Co., The, Inc.  
Louisville Ladder Co.  
Patent Scaffolding Co., Inc.  
Safeway Steel Products, Inc.

### Platforms, Steel

Alan Wood Steel Co.  
Ballymore Co.  
Rustin Steel Products, Inc.  
Globe Co., Grip-Strut Div.  
Inland Steel Co.  
Kiemp Metal Grating Corp.  
Safe-Lad Mfg. Co.

### Platforms, Tank Car

Ril-Jax, Inc.  
Rustin Steel Products, Inc.  
Magline Inc.  
Nichols Engineering Co.

### Platforms, Unloading

Rustin Steel Products, Inc.  
Magline Inc.  
Nichols Engineering Co.

### Pliers, Safety

Beryllium Corp.  
Boyer-Campbell Co.  
New Jersey Safety Equipment Co.  
Osborn Mfg. Co.  
Searjeant Metal Products, Inc.  
Standard Safety Equipment Co.

### Poison Ivy Treatments

Boyer-Campbell Co.  
Bullard, E. D., Co.  
Davis Emergency Equipment Co., Inc.  
D.R.S. Labs.  
Halperin, A. E., Co., Inc.  
I. D. U. Products Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Medical Supply Co.  
Mine Safety Appliances Co.  
Seco Safety Products Co.

### Pole Grip, Safety

American Allsafe Co., Inc.  
Industrial Products Co.  
Peterson Engineering Co.  
Rose Mfg. Co.  
Standard Safety Equipment Co.

### Poster Service

Elliott Service Co., Inc.  
Embossgraph Corp. of America  
National Safety Council  
Organization Services, Inc.  
Willson Products, Inc.

### Power Press Safety Controls Kits

National Pneumatic Co., Inc. &  
Hotzler Cabot Divisions

### Projector, Automatic and

#### Continuous

American Optical Co.  
Poster Slides

### Projectors, Film Strip

American Optical Co.  
Baush & Lomb Optical Co.  
DuKane Corp.  
Magnavox Corp.

### Projectors, Motion Picture

Ampro Corp.  
Basa Camera Co., Inc.  
Bell & Howell  
Colburn, Geo. W., Labs., Inc.  
DeVry Corp.  
Eastman Kodak Co.  
Modern Talking Picture Service  
Radio Corp. of America  
Sarra, Inc.  
Victor Animatograph Corp.  
Young America Films, Inc.

### Projectors, Sound Slidefilm

DuKane Corp.

### Promotional Material, Safety

National Safety Council, Part 2  
Organization Services, Inc.

### Protectors, Arm

American Allsafe Co., Inc.  
General Bandages, Inc.  
Holcomb Safety Garment Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Kimball Safety Products  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.  
Standard Safety Equipment Co.  
Wheeler Protective Apparel, Inc.

### Protectors, Ear

American Allsafe Co., Inc.  
American Optical Co.  
Bullard, E. D., Co.  
Industrial Products Co.  
Karel First Aid Supply Co.  
Kimball Safety Products  
Lee Sonle Ear-valv.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Standard Safety Equipment Co.

### Protectors, Finger

American Allsafe Co., Inc.  
Brossard, Lester L., Co.  
General Bandages, Inc.  
Goodyear Industrial Products Co., Inc.  
Industrial Gloves Co.  
Industrial Products Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Miller Products Co., Inc.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Record Industrial Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.  
Standard Safety Equipment Co.

### Protectors for Linemen

Bashlin, W. M., Co.  
Charleston Rubber Co.  
Davis Emergency Equipment Co., Inc.  
Industrial Gloves Co.  
Miller Products Co., Inc.  
Mine Safety Appliances Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Salisbury, W. H., & Co.

### Protectors, Knee

American Allsafe Co., Inc.  
Boyer-Campbell Co.  
Ellwood Safety Appliance Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Standard Glove Co.  
Standard Safety Equipment Co.

### Protector's Wire Rope

Newman Mfg. & Sales Co.

### Publications, Safety

Bullard, E. D., Co.  
Elliott Service Co., Inc.  
National Safety Council  
Noise Control  
Organization Services, Inc.

### Pumps, Acid

American Allsafe Co., Inc.  
Ampro Metal, Inc.  
Beas, John, Division Ford Machine  
& Chemical Corp.  
Blackmer Pump Co.  
Fisher Scientific Co.  
Genter, C. D., Co.  
Goodyear Industrial Products Co., Inc.

Industrial Products Co.  
Miller Products Co., Inc.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Robbins & Myers, Inc.  
Seco Safety Products Co.  
Standard Safety Equipment Co.

### Pumps, Foam

Cardox Corp.

### Pumps, Hand Operated

Acme Protection Equipment Co.  
Blackmer Pump Co.  
Davis Emergency Equipment Co., Inc.  
Industrial Products Co.  
New Jersey Safety Equipment Co.  
Practical Mfg. Co.  
Protectoseal Co., The  
Seco Safety Products Co.  
Smith, D. B., & Co., Inc.  
Tokheim Corp.

### Pumps, Oxygen

McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Safety First Supply Co.

## R

### Racks, Barrel

Economy Engineering Co.  
Industrial Products Co.

### Rail Punch

Mine Safety Appliances Co.

### Ramps and Runways

Alan Wood Steel Co.  
Rustin Steel Products, Inc.  
Globe Co., Grip-Strut Div.  
Kiemp Metal Grating Corp.

### Reels, Welding Hose

Genter, C. D., Co.  
United Specialty Corp.

### Reels, Wire

Genter, C. D., Co.  
Ideal Reel Co.  
United Specialty Corp.

### Reflectors, Lamp

Prairie State Products Co.  
Safety Clothing & Equipment Co.

### Regulators, Gas

American Industrial Safety Equip. Co.  
Cush, A. W., Valve Mfg. Corp.  
Duckson Corporation  
Safety First Supply Co.

### Rescue Apparatus, Diving and Underwater

Bongardner Mfg. Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
Scott Aviation Corp.

### Rescue Suits

Far-Ex Corp.  
Kennedy-Ingalls, V. E., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Seco Safety Products Co.  
Wheeler Protective Apparel, Inc.

### Respirators, Air-Line

American Optical Co.  
Bullard, E. D., Co.  
Chicago Eye Shield Co.  
Davis Emergency Equipment Co., Inc.  
Genter, C. D., Co.  
McDonald, B. F., Co.  
Michell Mfg. Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scott Aviation Corp.  
Seco Safety Products Co.  
Standard Safety Equipment Co.  
Willson Products, Inc.

### Respirators, Fume

American Industrial Safety Equip. Co.  
American Optical Co.  
Bullard, E. D., Co.  
Chicago Eye Shield Co.  
Davis Emergency Equipment Co., Inc.  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scott Aviation Corp.  
Seco Safety Products Co.  
Standard Safety Equipment Co.  
Wallace Optical Co., Inc.  
Willson Products, Inc.

### Respirators, Gas

Aloe, A. S., Co.  
American Optical Co.

See directory of Safety Equipment Sources for addresses.

## classified safety product index

Bullard, E. D., Co.  
Chicago Eye Shield Co.  
Davis Emergency Equipment Co., Inc.  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scott Aviation Corp.  
Standard Safety Equipment Co.  
Wallace Optical Co., Inc.  
Willson Products, Inc.

### Respirators, Dust—Type A

Aloe, A. S., Co.  
American Industrial Safety Equip. Co.  
American Optical Co.  
Brossard, Lester L., Co.  
Bullard, E. D., Co.  
Chicago Eye Shield Co.  
Cover, H. S.  
Davis Emergency Equipment Co., Inc.  
DeVilbiss Co.  
Dunn Products  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Seco Safety Products Co.  
Sellstrom Mfg. Co.  
Standard Safety Equipment Co.  
Wallace Optical Co., Inc.  
Willson Products, Inc.

### Respirators, Dust—Type A and Lead-Combination

American Optical Co.  
Brossard, Lester L., Co.  
Bullard, E. D., Co.  
Chicago Eye Shield Co.  
Cover, H. S.  
Davis Emergency Equipment Co., Inc.  
Dunn Products  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.  
Standard Safety Equipment Co.  
Wallace Optical Co., Inc.  
Willson Products, Inc.

### Respirators, Dust—Lead

American Optical Co.  
Brossard, Lester L., Co.  
Chicago Eye Shield Co.  
Cover, H. S.  
Davis Emergency Equipment Co., Inc.  
Dunn Products  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Michell Mfg. Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.  
Sellstrom Mfg. Co.  
Standard Safety Equipment Co.  
Wallace Optical Co., Inc.  
Willson Products, Inc.

### Respirators, Mists

Aloe, A. S., Co.  
American Optical Co.  
Chicago Eye Shield Co.  
Cover, H. S.  
Davis Emergency Equipment Co., Inc.  
DeVilbiss Co.  
Fisher Scientific Co.  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scott Aviation Corp.  
Standard Safety Equipment Co.  
Wallace Optical Co., Inc.  
Willson Products, Inc.

### Resuscitation Equipment

Bomgardner Mfg. Co.  
Bullard, E. D., Co.  
Davis Emergency Equipment Co., Inc.  
E & J Mfg. Co.  
Emergency Oxygen Inhalators, Inc.  
Emerson, J. H., Co.  
Halperin, A. E., Co., Inc.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scott Aviation Corp.  
Stephenson Corp.

### Rock Dusters

Mine Safety Appliances Co.  
Smith, D. B., & Co., Inc.

### Rope Grab, Life Line

American Allsafe Co., Inc.  
Industrial Products Co.  
McDonald, B. F., Co.  
Rose Mfg. Co.  
Standard Safety Equipment Co.

### Rope, Wire

American Chain & Cable Co.  
Bethlehem Steel Co.  
Colorado Fuel & Iron Co.  
Genter, C. D., Co.  
Jones Laughlin Steel Corp.  
Macwhitty Co.  
Union Wire Rope Corp.

## S

### Safety Chuck Keys

Lindstrom Mfg. Co.

### Safety Crutch Tips

Johnson Ladder Shoe Co.

### Safety Device, Tower Ladders

Safety Tower Ladder Co.

### Safetygraphs

Chart-Pak, Inc.  
National Safety Council

### Safety Hooks

American Chain & Cable Co.  
Bullard, E. D., Co.  
Laughlin, Thomas, Div., American  
Hoist & Derrick Co.  
Newman Mfg. & Sales Co.  
Taylor, S. G., Chain Co.

### Safety Lathe Wrenches

Lindstrom Mfg. Co.

### Safety Training

Discussion

### Safety Training Institute

National Safety Council

### Safety Truck Steps

Bullard, E. D., Co.  
Bustin Firm Grip Grating Co.

### Salt Tablets

Ace Mfg. Co.  
American Allsafe Co., Inc.  
Bullard, E. D., Co.  
Central Safety Equipment Co.  
Davis Emergency Equipment Co., Inc.  
D.R.S. Labs.  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
Industrial Products Co.  
International Salt Co., Inc.  
Karel First Aid Supply Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Medical Supply Co.  
Mine Safety Appliances Co.  
Morton Salt Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.  
Standard Safety Equipment Co.  
U. S. Safety Service Co.

### Salt Tablet Dispenser

Ace Mfg. Co.  
American Allsafe Co., Inc.  
Bullard, E. D., Co.  
Central Safety Equipment Co.  
Davis Emergency Equipment Co., Inc.  
Genter, C. D., Co.  
Halperin, A. E., Co., Inc.  
Industrial Products Co.  
International Salt Co., Inc.  
Karel First Aid Supply Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Medical Supply Co.  
Mine Safety Appliances Co.  
Morton Salt Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Standard Safety Equipment Co.  
U. S. Safety Service Co.

### Sand Blast Equipment

Charleston Rubber Co.  
Genter, C. D., Co.  
Miller Products Co., Inc.  
Mine Safety Appliances Co.  
Ruemelin Mfg. Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Standard Safety Equipment Co.  
Wheelabrator Corp.

### Sandals, Non-Skid

Associated Bag & Apron Co.  
Genter, C. D., Co.

Record Industrial Co.  
Reese Wooden Sole Shoe Co.  
Safety Clothing & Equipment Co.  
Scientific Industrial Supply Co.  
Standard Safety Equipment Co.

### Sandals, Shower

American Allsafe Co., Inc.  
Associated Bag & Apron Co.  
Genter, C. D., Co.  
Industrial Products Co.  
New Jersey Safety Equipment Co.  
Record Industrial Co.  
Reese Wooden Sole Shoe Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.

### Sandals, Wooden Sole

American Allsafe Co., Inc.  
Genter, C. D., Co.  
Industrial Products Co.  
Industrial Safety Belt Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Record Industrial Co.  
Reese Wooden Sole Shoe Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Seco Safety Products Co.  
Standard Safety Equipment Co.

### Saw, Portable

DeWalt, Inc.  
Wachs, E. H., Co.

### Scaffold, Jacks

Bil-Jax, Inc.  
Goshen Mfg. Co., Inc.  
Patent Scaffolding Co., Inc.  
Pittsburgh Plate Glass Co.  
Safway Steel Products, Inc.  
Waco Mfg. Co.

### Scaffolding, Rolling

Atlas Industrial Corp.  
Baker-Ross, Inc.  
Bil-Jax, Inc.  
Economy Engineering Co.  
Pittsburgh Plate Glass Co.  
Safway Steel Products, Inc.  
Waco Mfg. Co.

### Scaffolding, Safety

Atlas Industrial Corp.  
Beaver Art Metal Corp.  
Bil-Jax, Inc.  
Economy Engineering Co.  
Globe Co., Grip-Strut Div.  
Patent Scaffolding Co., Inc.  
Pittsburgh Plate Glass Co.  
Safety First Supply Co.  
Safway Steel Products, Inc.  
Steel Scaffolding Co.  
Universal Mfg. Corp.  
Waco Mfg. Co.

### Scrubbing Machines, Floor

Finnell System Inc.  
Hild Floor Machine Co.  
Pittsburgh Plate Glass Co.  
Tennant, G. H., Co.

### Seal for Fire Extinguishers

Genter, C. D., Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.

### Searchlights

Safety Clothing & Equipment Co.  
Safety First Supply Co.  
U-C Lite Mfg. Co.

### Self-Rescuers for Miners

McDonald, B. F., Co.  
Mine Safety Appliances Co.

### Sheet Lifters, Vacuum

Littell, F. J., Machine Co.

### Shield, Welding

Rausch & Lomb Optical Co.  
Chicago Eye Shield Co.  
Duckson Corp.  
Fibre-Metal Products Co., The  
Fronmelt Industries  
Genter, C. D., Co.  
Industrial Products Co.  
Jackson Products, Inc.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.  
Sellstrom Mfg. Co.  
U. S. Safety Service Co.  
Wallace Optical Co., Inc.  
Welsh Mfg. Co.

### Shin Guards

American Allsafe Co., Inc.  
Elwood Safety Appliance Co.  
Genter, C. D., Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.

To locate Advertisements, see Advertisers' Index.



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McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmosan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Standard Safety Equipment Co.  
Wheeler Protective Apparel, Inc.

### Shirts, Anatomical

Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.

### Shoe Preserver, Water Repellent

American Allsafe Co., Inc.  
Bullard, E. D., Co.  
Ilex Corning Corp.  
Halperin, A. E., Co., Inc.  
Iron Age Safety Shoe Div.,  
H. Childs & Co., Inc.  
McDonald, B. F., Co.  
New Jersey Safety Equipment Co.  
Rochester Safety Equipment Co.  
Standard Safety Equipment Co.

### Shoes, Conductive

Hy-Test Safety Shoes, Div.  
International Shoe Co.  
Lehigh Safety Shoe Co.

### Shoes, Leather, Linemen's

Rashlin, W. M., Co.  
Hy-Test Safety Shoes, Div.  
International Shoe Co.  
Miller Equipment Co.  
Record Industrial Co.  
Reece Wooden Sole Shoe Co.

### Shoes, Non-Sparking

Hy-Test Safety Shoes,  
Div. International Shoe Co.  
Iron Age Safety Shoe Div.,  
H. Childs & Co., Inc.  
Lehigh Safety Shoe Co.  
Mine Safety Appliances Co.  
Record Industrial Co.

### Shoes, Orthopedic, Wooden Sole

Karel First Aid Supply Co.  
Record Industrial Co.  
Reece Wooden Sole Shoe Co.  
Scientific Industrial Supply Co.

### Shoes, Rubber, Safety Toe

Beacon Falls Rubber Footwear  
Dunn Products  
Genter, C. D., Co.  
Goodyear Industrial Products Co., Inc.  
Industrial Products Co.  
Iron Age Safety Shoe Div.,  
H. Childs & Co., Inc.  
Lehigh Safety Shoe Co.  
McDonald, B. F., Co.  
Miller Products Co., Inc.  
Mine Safety Appliances Co.  
Record Industrial Co.  
Scientific Industrial Supply Co.  
Standard Glove Co.  
U. S. Rubber Co.

### Shoes, Safety Toe

Bone-Dry Shoe Mfg. Co.  
Dorsey Saf-T Shoe Co.  
General Shoe Corp.  
Sentry Shoe Co., Div.  
Genter, C. D., Co.  
Holland-Racine Shoes, Inc.  
Hy-Test Safety Shoes,  
Div. International Shoe Co.  
Iron Age Safety Shoe Div.,  
H. Childs & Co., Inc.  
Lehigh Safety Shoe Co.  
McAn, Thom, Safety Shoes Div.  
Mine Safety Appliances Co.  
Record Industrial Co.  
Reece Wooden Sole Shoe Co.  
Safety First Shoe Co.  
Scientific Industrial Supply Co.  
Wolf, Harry J., Shoe Co.

### Shoes for Women

Hy-Test Safety Shoes,  
Div. International Shoe Co.  
Iron Age Safety Shoe Div.,  
H. Childs & Co., Inc.  
Record Industrial Co.  
Reece Wooden Sole Shoe Co.

### Shoes, Wooden Sole

Allied Glove Co.  
American Allsafe Co., Inc.  
Genter, C. D., Co.  
Industrial Products Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
Record Industrial Co.  
Reece Wooden Sole Shoe Co.  
Scientific Industrial Supply Co.  
Standard Safety Equipment Co.

### Shower Baths, Industrial

Bradley Washfountain Co.  
Genter, C. D., Co.  
Haws Drinking Faucet Co.  
Industrial Products Co.  
New Jersey Safety Equipment Co.  
Scientific Industrial Supply Co.  
Speakman Co.

### Shower, Emergency

American Allsafe Co., Inc.  
Benson & Associates  
Fisher Scientific Co.

Genter, C. D., Co.  
Haws Drinking Faucet Co.  
Industrial Products Co.  
Karel First Aid Supply Co.  
McDonald, B. F., Co.  
New Jersey Safety Equipment Co.  
Speakman Co.

### Signals, Highway Warning

Vari-Products Co.

### Signs, Accident Prevention

American Allsafe Co., Inc.  
Brady, W. H., Co.  
Brossard, Lester L., Co.  
Bullard, E. D., Co.  
Davenport, A. C., & Son, Inc.  
Eastern Metal of Elmira, Inc.  
Electric Cord Co.  
Embossograph Corp. of America  
Industrial Products Co.  
Kennedy-Ingalls, V. E., Co.  
Matthews, Jas. H., & Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
Moore Signs, Inc.  
New Jersey Safety Equipment Co.  
Overton, R. H., Co.  
Prairie State Products Co.  
Pulmosan Safety Equipment Corp.  
Ready Made Sign Co., Inc.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Sargent-Sowell, Inc.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Standard Signs, Inc.  
Stonehouse Signs, Inc.  
Vari-Products Co.  
Wagner Sign Service, Inc.

### Signs, Reflecting

American Allsafe Co., Inc.  
Goyer-Campbell Co.  
Brossard, Lester L., Co.  
Eastern Metal of Elmira, Inc.  
Genter, C. D., Co.  
Industrial Products Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Prairie State Products Co.  
Ready Made Sign Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Sargent-Sowell, Inc.  
Standard Safety Equipment Co.  
Standard Signs, Inc.  
Stonehouse Signs, Inc.  
Vari-Products Co.

### Sirens and Signals

Bombardier Mfg. Co.  
Falcon Alarm Co., Inc.  
Federal Sign & Signal Corp.  
Genter, C. D., Co.  
Sternberg Siren Fire Alarm Co., Inc.  
Vari-Products Co.

### Skull Caps

Associated Bag & Apron Co.  
Boyer-Campbell Co.  
Fibre-Metal Products Co.  
Genter, C. D., Co.  
Kennedy-Ingalls, V. E., Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Scientific Industrial Supply Co.

### Sleeves, Linemen's Rubber

Salisbury, W. H., & Co.

### Sleeves, Protective

Advance Glove Mfg. Co.  
Allied Glove Co.  
Aljay Mfg. Co.  
American Allsafe Co., Inc.  
Boyer-Campbell Co.  
Brossard, Lester L., Co.  
Bullard, E. D., Co.  
Chicago Eye Shield Co.  
Erell Mfg. Co.  
Fibre-Metal Products Co., The  
Fisher Scientific Co.  
Genter, C. D., Co.  
Goodyear Industrial Products Co., Inc.  
Halperin, A. E., Co., Inc.  
Holecomb Safety Garment Co.  
Industrial Gloves Co.  
Industrial Products Co.  
Jonat, Inc.  
Kennedy-Ingalls, V. E., Co.  
Kimball Safety Products  
McDonald, B. F., Co.  
Milburn Co.  
Miller Products Co., Inc.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmosan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Sawyer, H. M., & Son Co.  
Scientific Industrial Supply Co.  
Standard Glove Co.  
Standard Safety Equipment Co.  
Tower, A. J., Co.  
Wheeler Protective Apparel, Inc.

### Slings, Chain

American Chain & Cable Co.  
Columbus-McKinnon Chain Corp.  
Genter, C. D., Co.  
Kensico Mfg. Co., Inc.  
Taylor, S. G., Chain Co.

### Sling Protectors

Newman Mfg. & Sales Co.

### Slings, Wire Rope

American Chain & Cable Co.  
Bethlehem Steel Co.  
Genter, C. D., Co.  
Jones & Laughlin Steel Corp.  
Kensico Mfg. Co., Inc.  
Lowery Bros., Inc.  
Maeshyke Co.  
Union Wire Rope Corp.  
Wickwire-Spencer Steel Div.,  
Colorado Fuel & Iron Co.

### Smoker's Stand

Karel First Aid Supply Co.  
New Jersey Safety Equipment Co.  
Standard Industrial Products Co.

### Soaps or Cleaners, Hand

Armour & Co.  
Associated Just Distrib., Inc.  
Banite Co.  
Boyer-Campbell Co.  
Breck, John H., Inc.  
Brossard, Lester L., Co.  
Brullin & Co., Inc.  
Chemical Corp., The  
Dameron Enterprises, Inc.  
Dolge, C. B., Co.  
Finnell System, Inc.  
Fuld Bros., Inc.  
Halperin, A. E., Co., Inc.  
Hillyard Chemical Co.  
Huntington Laboratories, Inc.  
Karel First Aid Supply Co.  
Kellite Corp.  
Kennedy-Ingalls, V. E., Co.  
Lightfoot-Schultz Co.  
Magnus Chemical Co., Inc.  
Milburn Co.  
Mine Safety Appliances Co.  
Mione Mfg. Co.  
Monsanto Chemical Co.  
Packwood, G. H., Mfg. Co.  
Procter & Gamble Co.  
Quicke Products, Inc.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Sindar Corp.  
Speedi-Dry Corp.  
Stegat Chemical Co.  
Sugar Beet Products Co.  
Vestal, Inc.  
West Disinfecting Co.  
Wrisley, Allen B., Co.

### Soap Dispensers

Banite Co.  
Brullin & Co., Inc.  
Chemical Corp.  
Dameron Enterprises, Inc.  
Dolge, C. B., Co.  
Finnell System, Inc.  
Halperin, A. E., Co., Inc.  
Hillyard Chemical Co.  
Huntington Laboratories, Inc.  
Karel First Aid Supply Co.  
Kellite Corp.  
Lightfoot-Schultz Co.  
Packwood, G. H., Mfg. Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Scientific Industrial Supply Co.  
Vestal, Inc.  
Wrisley, Allen B., Co.

### Soles, Shoe, Non-Slip

American Bitrite Rubber Co.  
Beefoot Sole Co., Inc.  
Cambridge Rubber Co.  
DuPont, E. I., JeNeMours & Co., Inc.  
Eagle-Tech Co.  
Gro-Cord Rubber Co.  
Quabaug Rubber Co.

### Solvents, Cleaning

Brullin & Co., Inc.  
Curran Corp.  
Diversey Corp.  
Dow Chemical Co.  
DuPont, E. I., de Nemours & Co., Inc.  
Fine Organics, Inc.  
Finnell System, Inc.  
Fisher Scientific Co.  
Flamort Chemical Co.  
Huntington Laboratories, Inc.  
Karel First Aid Supply Co.  
Legge, Walter G., Co., Inc.  
Magnus Chemical Co., Inc.  
Pittsburgh Plate Glass Co.  
Practical Mfg. Co.  
Scientific Industrial Supply Co.  
Teet, Inc.

### Sound Absorbers

Allied Witan Co., Inc.  
Belton Hearing Aid Co.  
Hanson, Elot, Inc.  
Industrial Acoustics Co., Inc.  
Industrial Sound Control, Inc.

### Sound Analyzers

General Radio Corp.  
Mine Safety Appliances Co.  
Scott, Herman Rosmer, Inc.

### Sound Protectors

Allied Witan Co., Inc.  
American Optical Co.  
McDonald, B. F., Co.  
Mine Safety Appliances Co.

### Spectacles, Industrial

Rausch & Lomb Optical Co.  
Bullard, E. D., Co.  
Chicago Eye Shield Co.  
Duckson Corp.  
Fendall Co.

See directory of Safety Equipment Sources for addresses.

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Fibre-Metal Products Co.  
Kennedy-Ingalls, V. E., Co.  
Kimball Safety Products  
McDonald, B. F., Co.  
Mine Safety Appliances Co.  
New Jersey Safety Equipment Co.  
Pulmonan Safety Equipment Corp.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Seco Safety Products Co.  
Seilstrom Mfg. Co.  
U. S. Safety Service Co.  
Wallace Optical Co., Inc.  
Watchemoket Optical Co.  
Welsh Mfg. Co.  
Willson Products, Inc.

## Sprinkler Systems

"Automatic" Sprinkler Corp.  
of America  
Blaw-Knox Co.  
Grinnell Co., Inc.  
Rockwood Sprinkler Co.

## Stain Remover, Floor

Associated Just Distrib., Inc.  
Fuld Bros., Inc.  
Magnus Chemical Co., Inc.  
Pittsburgh Plate Glass Co.

## Stair Treads, Safety

Alan Wood Steel Co.  
American Abrasive Metals Co.  
American Allsafe Co., Inc.  
Bustin Steel Products, Inc.  
Globe Co., Grip-Strut Div.  
Hallamite Mfg. Co., The  
Klemp Metal Grating Corp.  
New York Belting & Packing Co.

## Stairways

Bit-Jax, Inc.  
Bustin Steel Products, Inc.  
Globe Co., Grip-Strut Div.  
Woodbridge Ornamental Iron Co.

## Stamps, Steel Marking

Cunningham, M. E., Co.  
Matthews, James H., Co.

## Standards and Signs, Accident

**Prevention, Portable**  
American Allsafe Co., Inc.  
Charleston Rubber Co.  
Eastern Metal of Elmira, Inc.  
Industrial Products Co.  
McDonald, B. F., Co.  
Moore Signs, Inc.  
New Jersey Safety Equipment Co.  
Overton, R. B., Co.  
(Mfrs. Elkay Safety Signals)  
Prairie State Products Co.  
Pulmonan Safety Equipment Corp.  
Ready Made Sign Co., Inc.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Standard Safety Equipment Co.  
Standard Signs, Inc.  
Stonehouse Signs, Inc.  
Varl-Products Co.

## Static Ground Device, Personnel

Browne, Stewart R., Mfg. Co., Inc.  
Gibbert-Barker Co.  
LEEZE, Walter G., Co., Inc.

## Steel Toes, Safety Shoes

Safety Box Too Co.

## Sterilizing Equipment

Aloe, A. B., Co.  
Fisher Scientific Co.  
Halperin, A. E., Co., Inc.  
Karel First Aid Supply Co.  
Safety First Supply Co.  
Vacuum Can Co.

## Stirrups, Mechanical

Albina Machine & Engine Works, Inc.  
Smith, D. B., & Co., Inc.

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Durable Mat Co.	64	Minnesota Mining & Mfg. Co.	61	Wickwire Spencer Steel Div.	223
Eagle Mfg. Co.	271	Modern Machine Tool Co.	241	Wiesman Mfg. Co.	240
Eagle-Picher Sales Co.	45	Morrison Products, Inc.	246	Wilkins Co., Inc.	131
Economy Engineering Co.	63	National Safety Council	319-320-321-322	Williams Jewelry & Mfg. Co.	311
Electric Cord Co.	272	Newco Mfg. Co.	228	Willson Products, Inc.	117
				Worklon, Inc.	203



# Want More Information?

... the Reader Service postcard will get it for you FAST!

Here's how it works—

Printed below are two identical Reader Service postcards—the bottom one for your use; the top one for later readers of this issue. The numbers listed on each card are keyed to products advertised. Just circle the items you want to know more about, and we will ask the manufacturer to send you full information without obligation. Both cards are perforated for easy removal and no postage is required.

Please show company name in full—do not abbreviate.

Please send me more information on the items circled below:

MARCH 1956

PRODUCTS ADVERTISED:																													
IFC	18	23	26	27	28T	28B	29	31T	31B	32LT	32LB	32R	34	37															
39	40	41	43	45L	45R	47	49	51	52	53	55	56	57L	57R															
58	59	60T	60B	61T	61B	62	63L	63R	64T	64B	65LT	65LB	65R	66L															
66R	68	73	74	75	76	77	78	79	80L	80R	81	82	83	84															
85	86	87	88L	88R	89	90	91	92	93L	93R	94T	94B	95L	95R															
96	97T	97B	98L	98R	100	104	105	106	107	108	109	110T	110B	114															
115	117	119	121	123	125	126	128	129	131	133	135	137	138	139															
140	141T	141B	142	143	144	145L	145R	146T	146B	147	148L	148R	149L	149R															
150	155	156	157	159	161	162	163	165	167	169	171	173	174	176															
177	178	179	181	183	185	186	187	188L	188R	189T	189B	190	191	192T															
192B	193T	193B	194T	194B	195T	195B	196	197	198	199	200	201T	201B	202T															
202B	203L	203R	204LB	204TR	204BR	205L	205R	206LT	206LB	206RT	206RB	208	211	215															
217	219	220	221	222	223	224	225	226	227	228T	228B	229	233	235															
237	238	239	240L	240R	241T	241B	242L	242R	243L	243R	244T	244B	245T	245B															
246LT	246LB	246RB	248	249	252	253	255	257	259	260	261	262	263	264															
265	266	267	269	270	271T	271B	272T	272B	273	274	275	276	277	278															
280	285	286	287	288	289	290L	290R	291L	291R	292T	292B	293L	293R	294T															
294B	295L	295R	296T	296B	297L	297R	298L	298R	300	305	306	307L	307R	308															
309	310	311	314T	314B	315	316	317	318LT	318LB	318RT	318RB	IBC	BC																

## Products Advertised

As you read through this issue of the NEWS, you will find advertisements describing equipment that may help you solve some of your accident problems. Instead of making a "mental note," make sure you get full information by circling the corresponding page number on the Reader Service postcard. The letters L, R, T and B locate the ads on the page—left, right, top and bottom. IFC—inside front cover; IBC—inside back cover; BC—back cover.

Please send me more information on the items circled below:

MARCH 1956

PRODUCTS ADVERTISED:																													
IFC	18	23	26	27	28T	28B	29	31T	31B	32LT	32LB	32R	34	37															
39	40	41	43	45L	45R	47	49	51	52	53	55	56	57L	57R															
58	59	60T	60B	61T	61B	62	63L	63R	64T	64B	65LT	65LB	65R	66L															
66R	68	73	74	75	76	77	78	79	80L	80R	81	82	83	84															
85	86	87	88L	88R	89	90	91	92	93L	93R	94T	94B	95L	95R															
96	97T	97B	98L	98R	100	104	105	106	107	108	109	110T	110B	114															
115	117	119	121	123	125	126	128	129	131	133	135	137	138	139															
140	141T	141B	142	143	144	145L	145R	146T	146B	147	148L	148R	149L	149R															
150	155	156	157	159	161	162	163	165	167	169	171	173	174	176															
177	178	179	181	183	185	186	187	188L	188R	189T	189B	190	191	192T															
192B	193T	193B	194T	194B	195T	195B	196	197	198	199	200	201T	201B	202T															
202B	203L	203R	204LB	204TR	204BR	205L	205R	206LT	206LB	206RT	206RB	208	211	215															
217	219	220	221	222	223	224	225	226	227	228T	228B	229	233	235															
237	238	239	240L	240R	241T	241B	242L	242R	243L	243R	244T	244B	245T	245B															
246LT	246LB	246RB	248	249	252	253	255	257	259	260	261	262	263	264															
265	266	267	269	270	271T	271B	272T	272B	273	274	275	276	277	278															
280	285	286	287	288	289	290L	290R	291L	291R	292T	292B	293L	293R	294T															
294B	295L	295R	296T	296B	297L	297R	298L	298R	300	305	306	307L	307R	308															
309	310	311	314T	314B	315	316	317	318LT	318LB	318RT	318RB	IBC	BC																

**IMPORTANT**—Be sure to fill in your name, organization and address in the space provided on this side of the postcard.

# *The advertising pages of the News*

## **. . . your guide to reliable suppliers of worthwhile safety equipment**

The advertising policy of the NEWS requires that all equipment and products meet established codes and standards, have the approval of recognized testing agencies, or have proven their value through actual use in industry. Council engineers and technicians screen every

advertisement to make sure that product description is accurate, and performance claims verified by reliable sources. It should not be construed, however, that products advertised are approved or endorsed by the National Safety Council.

FIRST CLASS  
PERMIT No. 834  
CHICAGO, ILL.

### **BUSINESS REPLY CARD**

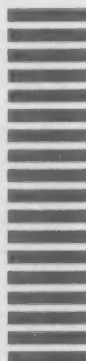
No Postage Stamp Necessary If Mailed in the United States

4c — POSTAGE WILL BE PAID BY —

*Reader Service Department*

### **NATIONAL SAFETY NEWS**

425 NORTH MICHIGAN AVENUE  
CHICAGO 11, ILLINOIS



FIRST CLASS  
PERMIT No. 834  
CHICAGO, ILL.

### **BUSINESS REPLY CARD**

No Postage Stamp Necessary If Mailed in the United States

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*Reader Service Department*

### **NATIONAL SAFETY NEWS**

425 NORTH MICHIGAN AVENUE  
CHICAGO 11, ILLINOIS



**Before you  
mail your  
Reader  
Service  
postcard . . .  
TAKE  
ANOTHER  
LOOK  
at the  
ADVERTISING  
PAGES**

Make sure all the items you want to know more about are circled . . . check to make sure your name, organization, and address are printed on the reverse side of the postcard . . . THEN mail it today.

*National Safety News, March, 1956*

# CESCO

## RIGHT... before your Eyes!



Cup-type  
Goggles



Spectacle-type Goggles



Plastic Frame Goggles



Cover Goggles



Lite-Specs



Fiber  
Glass  
Helmet



Approved  
Respirator  
Hood



Hat-n-Shield



Face  
Shields



Chemical Goggles

**WHATEVER  
TYPE OF SAFETY  
EQUIPMENT YOU  
NEED...BUY WITH  
CONFIDENCE from  
the CESCO Distributor  
listed here**

• You don't need to hunt for the best source of safety equipment. Take it from CESCO, you can buy with confidence from the firms listed here. CESCO has the finest type of distributor representation—the kind you want when in the market for every type of safety and protective equipment. These firms are safety specialists and well stocked with equipment that has stood the test of time in industrial plants everywhere.

You can buy with confidence  
from CESCO distributors

ATLANTA, GA.  
Guardian Safety Equipment Co.  
427½ Moreland Avenue, N. E.

BIRMINGHAM, ALA.  
"L. P." Hartless Company  
2627 Seventh Avenue, South

BOSTON, MASS.  
General Equipment Corporation  
261 Franklin Street

BUFFALO, N. Y.  
The Watson Company  
1443 Main Street

CHICAGO, ILL.  
Universal Safety Equipment Co.  
5115 Diversey

CINCINNATI, OHIO  
Williams & Co., Inc.  
3231 Fredonia Avenue

CLEVELAND, OHIO  
Williams & Co., Inc.  
3700 Perkins Avenue

COLUMBUS, OHIO  
Williams & Co., Inc.  
851 Williams Avenue

DALLAS, TEXAS  
Guardian Safety Equipment Co.  
900 Jefferson Tower Bldg.

DETROIT, MICH.  
Averill Equipment Company  
19225 Conant Avenue

HOUSTON, TEXAS  
Guardian Safety Equipment Co.  
1915 Westheimer

KANSAS CITY, MO.  
Safety, Incorporated  
17 E. 31st Street

KNOXVILLE, TENN.  
Safety Equipment Distributing Co.  
832 W. Main Avenue

LITTLE ROCK, ARK.  
Fire Appliance & Safety Co.  
1114 W. Markham

LOS ANGELES, CALIF.  
Guardian Safety Equipment Co.  
7223 S. Main Street

LOUISVILLE, KENTUCKY  
Williams & Co., Inc.  
1109 S. Preston Street

MILWAUKEE, WIS.  
Universal Safety Equipment Co.  
3155 S. 7th Street

ORANGE, N. J.  
Guardian Safety Equipment Co.  
400 S. Jefferson Street  
(New York-New Jersey Area)

PEORIA, ILL.  
Universal Safety Equipment Co.  
116 S. Garfield

PHILADELPHIA, PA.  
Guardian Safety Equipment Co.  
214 S. 45th Street

PITTSBURGH, PA.  
Williams & Co., Inc.  
901 Pennsylvania Avenue

ST. LOUIS, MO.  
Safety, Inc.  
2608 Olive Street

ST. PAUL, MINN.  
Continental Safety Equipment, Inc.  
1551 Selby Ave.

SALT LAKE CITY, UTAH  
Universal Fire & Safety  
Equipment Co., Box 1587

SAN MATEO, CALIF.  
Guardian Safety Equipment Co.  
220 Third Avenue

SPOKANE, WASH.  
Spokane Safety Appliance Co.  
North 219 Division Street

TOLEDO, OHIO  
Williams & Co., Inc.  
946 Kane Street

TULSA, OKLA.  
Guardian Safety Equipment Co.  
1742 S. Main Street

WICHITA, KANS.  
Guardian Safety Equipment Co.  
723 S. Broadway

MEXICO CITY, D. F.  
Safety Equipment S. A.  
Sullivan-95

MONTREAL, CANADA  
The Butler Optical Company, Ltd.  
1520 Mountain Street

CHICAGO EYE SHIELD COMPANY  
2306 Warren Boulevard  
Chicago 12, Illinois

# CESCO



## FOR SAFETY

Approved  
Respirators



R-5051  
Twin  
Cartridge  
Respirator



  
Respiratory  
Protection



## Two **AO**<sup>†</sup> Best Buys in Respirators for Paint Spraying!

- Exceptionally Long Filter Life
- Extremely High Efficiency

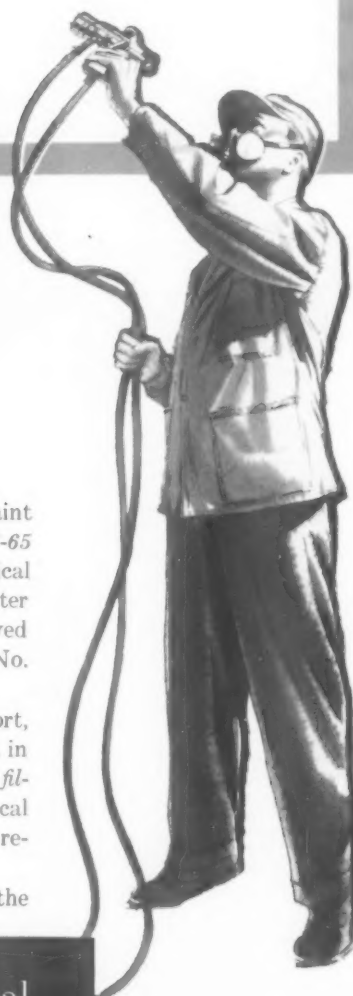


R-2031  
Respirator

For complete security and the finest respiratory protection against paint sprays and vapors you need only the AO R-5051 Respirator *plus* AO R-65 auxiliary filters which prevent droplets of paint from plugging the chemical cartridges. R-65 filters are packaged 200 per box and two R-66 auxiliary filter clamps are provided with each box of auxiliary filters. The R-5051 is approved by the U. S. Bureau of Mines for use against organic vapors. (Approval No. BM-2304.)

The single cartridge AO R-2031 Respirator is light in weight for comfort, highly efficient . . . and engineered for long life. For this quality protection in paint spraying merely order the R-2031 Respirator *plus* AO R-7 auxiliary filters. These auxiliary filters prevent paint droplets from plugging the chemical cartridge. R-7 filters are packaged 100 per box and are easily attached or removed from the respirator.

Your nearest AO Safety Products Representative can supply you with the face piece and components to meet your special needs. Check with him also for AO safety glasses and protective clothing.



American Optical



SAFETY PRODUCTS DIVISION

<sup>†</sup>T.M. Reg. by American Optical Company

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES



## CONDITIONS AND TERMS

## IMPRINTING CHARGES

*All prices are subject to a 10% discount to National Safety Council Members. To all others, prices apply as shown.*

Prices shown in this catalog are effective January 1, 1957, payable U. S. Funds. They are subject to change without notice.

All prices shown are based on a single order for delivery in one shipment to one destination (one shipment per month on annual subscriptions). Quantities are not cumulative over a period of time, or for a number of locations, to obtain quantity prices.

All prices unless otherwise shown are pre-paid destination within the United States and Canada and Pan American Union. Customs charges will not be paid by the Council. An additional charge equal to 4% of the order will be made on shipment to foreign countries.

Terms of payment on all invoices are 30 days net, except quantity calendar purchases. Annual subscriptions payable in advance.

Remittance should accompany all orders totalling one dollar or less to conserve labor and speed up handling of the order.

Special sorting or packaging, trimming to special sizes or other special handling of publications will, wherever possible, be performed as requested. Service charges will be made for the cost of such work.

Imprinting can be done on all Council publications (outside front and back covers only) provided there is sufficient space and a light background color.

In general, imprinting is limited to three lines. On large posters, imprinting is limited to the right hand half of the lower margin. It is understood that a quantity within 4% above or below the quantity requested will constitute an acceptable delivery on any order requiring imprinting.

Imprinting at time of publication:

Safe Driver, Safe Worker, and all other publications imprinted at time of publication (except calendars), regardless of quantity—per lot or per month on monthly publications ..... \$2.25

On monthly publications, the per lot-per month charge of \$2.25 is effective only when the imprint remains the same during the period of subscription.

Imprinting after publication:

Large posters (17" x 23")—1st 1,000 or fraction ..... \$11.00  
additional 1,000 or fraction ..... 8.35

Other publications imprinted after publication, where space permits:

1st 1,000 or fraction ..... \$7.80  
additional 1,000 or fraction ..... 3.35

Item No.		1 to 9	10 to 99	100 to 999	1,000 to 4,999	5,000 to 9,999	10,000 to 19,999	20,000 or more	Page
129.29	Accident Analysis Charts, pads of 50, ea.	\$ 1.20	\$ 1.15	\$ 1.05	\$ .98	—	—	—	9
021.5	Accident Facts, ea.	1.15	.85	.80	.75	—	—	—	9
191.10	Accident Preventers, any selection, ea.	.11	.057	.028	.023	.021	.02	.019	30-32
121.41	Accident Prevention Manual, ea.	13.50	12.75	12.00	—	—	—	—	3
125.55	Accident Rates Pamphlets, Industrial, ea.	.85	.70	.65	—	—	—	—	9
229.25	Accident Rates Pamphlet Commercial Vehicle, ea.	.85	.70	.65	—	—	—	—	9
	Accident Record Forms, Industrial								
129.21	IS-1A, ea.	.07	.026	.02	.017	—	—	—	9
129.23	IS-3, ea.	.07	.026	.02	.017	—	—	—	9
129.25	IS-5A, ea.	.07	.026	.02	.017	—	—	—	9
129.26	IS-6 (pads of 100), ea.	.40	—	—	—	—	—	—	9
129.27	IS-7, ea.	.07	.026	.02	.017	—	—	—	9
129.28	IS-8, ea.	.07	.026	.02	.017	—	—	—	9
	Accident Record Forms, Motor Transportation								
229.31	Veh-1, ea.	.07	.026	.02	.017	—	—	—	9
229.32	Veh-2, ea.	.14	.092	.05	—	—	—	—	9
229.33	Veh-3, ea.	.09	.04	.033	.026	—	—	—	9
229.34	Veh-4, ea.	.07	.026	.02	.017	—	—	—	9
229.35	Veh-5, ea.	.14	.092	.05	—	—	—	—	9
229.36	Veh-6, ea.	.07	.026	.02	.017	—	—	—	9
229.37	Veh-10, ea.	.26	.20	.16	.138	—	—	—	9
229.38	Veh-12, ea.	.07	.026	.02	.017	—	—	—	9
001.10	Administrative Unit—AA-1	28.50	—	—	—	—	—	—	13
002.20	Administrative Unit—A-1	19.50	—	—	—	—	—	—	13
002.40	Administrative Unit—C-1	12.50	—	—	—	—	—	—	13
003.20	Administrative Unit—A-2	20.00	—	—	—	—	—	—	13
003.30	Administrative Unit—B-2	13.50	—	—	—	—	—	—	13
003.40	Administrative Unit—C-2	9.50	—	—	—	—	—	—	13
002.31	Administrative Unit—B-11	13.50	—	—	—	—	—	—	13
041.12	Ambassador Pencil	See 'Pencils' in this listing							52
Awards	listed alphabetically in this section.								
044.52	Award Desk Pennant, Honor or Merit, ea.	1.15	.80	.69	—	—	—	—	48
044.18	Award of Commendation Pin, ea.	.98	.72	.68	.67	—	—	—	51
050.10	Award Disk Key Chain (Add 10% F.E.T.)	1.50	1.30	1.25	1.24	—	—	—	53
031.23	Award of Honor Pennant, ea.	21.00	18.50	—	—	—	—	—	48

All prices shown are subject to a 10% discount to National Safety Council members.

Item No.	1 to 9	10 to 99	100 to 999	1,000 to 4,999	5,000 to 9,999	10,000 to 19,999	20,000 or more	Page
<b>A</b> 044.16 Award of Honor Pin, ea.	.98	.72	.68	.67	—	—	—	51
031.24 Award of Merit Pennant, ea.	21.00	18.50	—	—	—	—	—	48
044.17 Award of Merit Pin, ea.	.98	.72	.68	.67	—	—	—	51
<b>B</b> 397.01 Back the Attack-Ten-Shun leaflets in packets of 100; packets, ea.	6.70	5.70	5.00	4.50	4.50	4.50	4.50	34
Banners, Safety,	1	2 to 9	10 to 49	50 or more	—	—	—	—
188.51 Indoor, Annual Subscription (12 issues) ea.	85.00	79.50	76.00	72.50	—	—	—	50
188.61 Outdoor, Annual Subscription (12 issues) ea.	96.50	91.00	87.50	84.00	—	—	—	50
188.53 Indoor, single issue, ea.	8.50	7.95	7.60	7.25	—	—	—	50
188.63 Outdoor, single issue, ea.	9.65	9.10	8.75	8.40	—	—	—	50
294.07 Be Your Own Traffic Judge, ea.	.20	.15	.11	.09	.085	—	—	34
<b>C</b> 091.17 Calendars, National Safety	—	—	—	—	—	—	—	65
044.18 Commendation Emblem Pins, ea.	.98	.72	.68	.67	—	—	—	51
044.21 Committee Badge, ea.	.86	.69	.63	.61	—	—	—	51
044.22 Committee Badge, Personalized, ea.	—	.75	.69	.63	—	—	—	51
022.26 Communications and Safety (Pers. Development Pamphlet) ea.	.35 in any quantity.	—	—	—	—	—	—	—
049.14 Cuff Links, Green Cross, per pair (Add 10% Federal Excise Tax)	1.80	1.63	1.58	1.57	—	—	—	53
022.16 Current Safety Topics (Congress Transactions) set ea.	9.50	—	—	—	—	—	—	8
022.26 Current Safety Topics, Industrial Volumes	—	—	—	—	—	—	—	8
12 pages or less, ea.	.25	.20	.17	—	—	—	—	—
13 to 24 pages, ea.	.35	.28	.25	—	—	—	—	—
25 to 48 pages, ea.	.45	.37	.33	—	—	—	—	—
49 to 96 pages, ea.	.60	.50	.45	—	—	—	—	—
Over 96 pages, ea.	.85	.75	.70	—	—	—	—	—
<b>D</b> 262.01 Dash Card Sets—Subscriptions (24 Issues), ea.	.79	.67	.50	.45	—	—	—	56
262.24 Dash Stickers, set of 12, ea.	.90	.70	.60	.55	—	—	—	56
123.01 Data Sheets, General Set, (101 subjects in 3 ring binder) ea.	18.70	—	—	—	—	—	—	4.5
123.02 Data Sheets, Special Industry Set, (82 subjects in 3 ring binder) ea.	18.70	—	—	—	—	—	—	4.5
123.03 Data Sheets, Chemical Set, (53 subjects in envelope) ea.	9.00	—	—	—	—	—	—	4.5
123.04 Data Sheets, any selection, ea.	.35	.25	.20	.18	—	—	—	4.5
123.06 Data Sheet Tab Dividers, set, ea.	.80	—	—	—	—	—	—	4.5
192.06 Deadly Ideas, ea.	.20	.13	.092	.072	.063	.057	.051	29
196.00 Decalcomanias, any selection, ea.	.14	.09	.07	.055	—	—	—	36
294.01 Defensive Driving, Bus, ea.	.20	.13	.092	.067	.058	—	—	35
294.02 Defensive Driving, Truck, ea.	.20	.13	.092	.067	.058	—	—	35
599.34 Dennis The Menace on Safety, ea.	.20	.13	.08	.058	.054	—	—	33
044.51 Desk Flag, Green Cross, Safety, ea.	1.15	.80	.69	—	—	—	—	48
124.04 Detail Sheets, any selection, ea.	.25	.15	.10	.09	—	—	—	6
124.01 Detail Sheets, Current Set, Including Binder, ea.	14.50	14.00	—	—	—	—	—	6
124.05 Detail Sheet Binders only, ea.	2.85	—	—	—	—	—	—	6
189.01 Directory of Occupational Safety Posters, ea.	.60	.45	.35	—	—	—	—	49
050.03 Gold Disk Bracelet, ea. (Add 10% F.E.T.)	1.40	1.21	1.17	1.16	—	—	—	53
050.10 Disk Key Chain, ea. (Add 10% F.E.T.)	1.50	1.30	1.25	1.24	—	—	—	53
192.12 Do We Still Need Safety, ea.	.20	.13	.092	.072	.063	.057	.051	29
Driver Training Films	See individual titles listed in film section at end of this listing.							
195.25 Down Time, ea.	.15	.10	.069	.052	.046	.04	.035	32
<b>E</b> 191.10 Electricity—A.P. #502	See 'Accident Preventers' in this listing.							31
Employee Training Films	See individual titles listed in film section at end of this list.							—
044.14 Enameled No-Accident Award Pins, ea.	.75	.61	.58	.56	—	—	—	51
191.10 Eye Protection—A.P. #302	See 'Accident Preventers' in this listing.							32
<b>F</b> 195.63 Fall Guy, The, ea.	.15	.10	.069	.052	.046	.04	.035	30
195.74 Falls Aren't Funny, ea.	.20	.12	.092	.072	.063	.057	.051	30
FALLS CAMPAIGN MATERIALS	See 'National Campaign for the Prevention of Falls'.							—
611.01 Farm Safety Review, Subscription (12 issues), ea.	1.15	.80	.69	.58	—	—	—	12
FILMS	See separate listing at end of this list.							—
195.01 First Aid Reminders, set of 8, ea.	.40	.28	.21	.189	—	—	—	32
195.04 First Aid Reminders, any selection, ea.	.10	.058	.04	.03	—	—	—	32
195.26 Fit As A Fiddle, ea.	.20	.13	.092	.07	.063	.057	.051	32
229.51 Five Minute Safety Talks for Driver Supervisors, ea.	1.95	1.75	1.65	1.60	—	—	—	18
152.22 Five Minute Safety Talks for Foremen on Falls, ea.	.85	.67	.50	.45	.45	.45	.45	18
Five Minute Safety Talks Series	See 'Foreman's 5 Minute Talks'.							18
195.76 Flames I Have Known, ea.	.20	.13	.092	.07	.063	.057	.051	30

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Item No.		1 to 9	10 to 99	100 to 999	1,000 to 4,999	5,000 to 9,999	10,000 to 19,999	20,000 or more	Page
<b>F</b>									
	Fleet Record Forms	See 'Accident Record Forms, Motor Transportation.							9
044.33	Fleet Safety Contest Winner Emblem, ea.	\$.98	\$.72	\$.68	\$.67	—	—	—	51
221.22	Fleet Safety Manual, Individual Parts, ea.	.95	.80	.75	.72	—	—	—	11
221.22	Fleet Safety Manual, ea.	9.75	—	—	—	—	—	—	11
229.10	Fleet Safety Memos, ea.	.25	—	—	—	—	—	—	9
152.02	Foremen's 5 Minute Safety Talks— Book 1, ea.	1.95	1.75	1.65	1.60	—	—	—	18
152.03	Foremen's 5 Minute Safety Talks— Book 2, ea.	1.95	1.75	1.65	1.60	—	—	—	18
152.04	Foremen's 5 Minute Safety Talks— Book 3, ea.	1.95	1.75	1.65	1.60	—	—	—	18
152.05	Foremen's 5 Minute Safety Talks— Book 4, ea.	1.95	1.75	1.65	1.60	—	—	—	18
152.06	Foremen's 5 Minute Safety Talks— Book 5, ea.	1.95	1.75	1.65	1.60	—	—	—	18
152.07	Foremen's 5 Minute Safety Talks— Book 6, ea.	.14	.09	.07	.055	—	—	—	48
152.01	Foremen's 5 Minute Safety Talks Construction and Maintenance	1.95	1.75	1.65	1.60	—	—	—	18
152.21	Foreman's 5 Minute Safety Talks for Tailboard Meetings	See 'Safety Talks for Construction, etc..							18
292.20	For Experts Only, ea.	.26	.24	.20	.173	—	—	—	35
191.10	Four Principles of Hand Tools—A.P. #501	See 'Accident Preventers'.							31
195.75	Get A Load of This, ea.	.20	.13	.092	.072	.063	.057	.051	31
191.10	Get First Aid Fast, A.P. #401	See 'Accident Preventers'.							32
050.03	Gold Disk Bracelet, ea. (Add 10% F.E.T.)	1.40	1.21	1.17	1.16	—	—	—	53
159.11	Graphic Arts Industry Safety Study Course, ea.	\$19.50 (any quantity)							9
<b>G</b>									
033.01	Green Cross Electros								
	1/2", 5/8", ea.	.85	.80	—	—	—	—	—	48
	3/4", 1", ea.	1.60	1.38	—	—	—	—	—	48
	1 1/2", ea.	2.30	2.15	—	—	—	—	—	48
196.00	Green Cross Decals	See 'Decalcomanias' in this listing.							48
044.51	Green Cross Desk Flag, ea.	1.15	.80	.69	—	—	—	—	48
031.01	Green Cross Flag, ea.	11.50	11.00	—	—	—	—	—	48
031.31	Green Cross Flag, Storm, ea.	5.75	5.50	—	—	—	—	—	48
035.20	Green Cross Display Easel, ea.	3.75	2.75	2.50	—	—	—	—	48
044.41	Green Cross Safety Patch, ea.	.55	.36	.30	.26	—	—	—	48
	Green Cross Stickers,								
037.01	3" Paper, per thousand	7.00	—	—	—	—	—	—	48
037.02	4" Paper, per thousand	7.00	—	—	—	—	—	—	48
037.06	5/8" Metallic Foil, per thousand	4.00	—	—	—	—	—	—	48
037.05	1" Metallic Foil, per thousand	4.00	—	—	—	—	—	—	48
044.01	Green Cross Lapel Pin, ea.	.55	.39	.36	.35	—	—	—	51
031.31	Green Cross Storm Flag, ea.	5.75	5.50	—	—	—	—	—	48
129.02	Handbook of Accident Prevention, ea.	1.75	1.40	1.20	1.10	—	—	—	16
194.34	Have A Good Time, ea.	.15	.10	.069	.052	.046	.043	.04	29
192.10	Heads You Win, ea.	.20	.13	.092	.072	.063	.057	.051	33
399.04	Highway Zoo, ea.	.15	.09	.06	.045	.04	.035	.032	34
511.01	Home Safety Review, Subscription (10 issues), ea.	2.25	2.10	1.95	Add .25 for foreign, except Canada and Pan American Union			12	
041.11	Honor Guard Pencil	See 'Pencils' in this listing.							52
129.55	Hospital Safety Manual, ea.	2.25	1.90	1.70	—	—	—	—	11
X10.00	Hospital Safety Service, ea.	10.00	—	—	—	—	—	—	9
294.05	How To Be A Smooth Operator, ea.	.20	.13	.092	.067	.058	—	—	35
029.02	How To Make The Safety Speech, ea.	.85	.72	.67	.65	—	—	—	16
195.68	How To Prevent Falls, ea.	.15	.10	.069	.052	.046	.04	.035	30
129.86	How To Start A Safety Program, ea.	.70	.50	.40	.35	—	—	—	10
191.10	Housekeeping, A.P. #201	See 'Accident Preventers'.							
	'Human Factors in Safety' film series	See Film Section at end of this listing.							20
<b>INCENTIVES</b>									
	Industrial Data Sheets	See 'Data Sheets' in this listing.							
<b>I</b>									
122.04	Industrial Safety Series Pamphlets, any selection, ea.	.55	.39	.36	.35	—	—	—	48
044.30	Industry Safety Contest winner emblem, ea.	.98	.72	.68	.67	—	—	—	51
131.01	Industrial Supervisor, Subscription (12 issues), ea.	2.15	2.00	1.90	1.85	1.60	1.45	—	14
131.03	Industrial Supervisor, single issue, ea.	.25	.20	.19	.185	.16	.145	—	14
195.34	Instructor's Guide, for use with Supervisor's Safety Manual, ea.	.60	(any quantity)						15
399.64	It's Up To You, ea.	.20	.15	.09	.08	.075	.072	.072	35
399.63	It's Your Responsibility, ea.	.15	.10	.06	.05	.045	.042	.04	34
<b>J</b>									
129.97	Jig and Fixture Design For Woodworking Safety, ea.	2.00	1.70	1.55	1.45	—	—	—	10
	Jumbo Posters	See 'Posters' in this listing.							50
<b>K</b>									
048.10	Key Case, ea. (Add 10% Federal Excise Tax)	.85	.63	.59	.57	—	—	—	52

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Item No.		1 to 9	10 to 99	100 to 999	1,000 to 4,999	5,000 to 9,999	10,000 to 19,999	20,000 or more	Page
K L	050.10	Key Chain, Disk, Award, ea. \$ 1.50 \$ 1.30 \$ 1.25 \$ 1.24 — — — — 53							
		(Add 10% Federal Excise Tax)							
		Lapel Pins; Award of Honor, Merit, etc. See 'Award' in this listing. 51							
	044.01	Lapel Pin, Green Cross, ea. .55 .39 .36 .35 — — — — 51							
	044.02	Lapel Pin, Sammy Safety, ea. .85 .70 .65 .63 — — — — 51							
M	022.26	Let's Get Personal (Personal Development Pamphlet) ea. .35 in any quantity. 17							
		Lighter, Park Windproof							
	050.96	With 1/4" Green Cross, ea. 2.45 2.10 2.07 2.06 — — — — 53							
	050.90	With 3/8" Green Cross, ea. 2.55 2.20 2.17 2.16 — — — — 53							
	191.10	Lifting A.P. #101 See 'Accident Preventers' 31							
	129.66	Marine Oil-Fired Watertube Boilers, Safety Manual for, ea. 1.70 1.45 1.30 1.25 — — — — 11							
	129.46	Manual of Accident Prevention in Construction, ea. 3.35 — — — — — — — — 11							
	195.71	Man With The Badge, The, ea. .70 .50 .35 .30 — — — — 30							
	047.30	Men's Deluxe Wallet, ea. 1.20 .97 .93 .92 — — — — 52							
		(Add 10% Federal Excise Tax)							
	044.25	Meritorious Service Award Pins, ea. .65 .51 .47 .46 — — — — 51							
		Metal No-Accident Award Buttons See 'No Accident Award Buttons.' 51							

#### NATIONAL CAMPAIGN FOR THE PREVENTION OF FALLS

188.91	Banners, set of 3, per set	1 or 2, \$27.00; 3-14, \$25.80; 15 or more, \$24.70							26
188.91	Banners, Individual, order by title	1 or 2	3-14			15 or more			26
	#1 Don't Be A Fall Guy, ea.	\$9.75	\$9.20			\$8.60			
	#2 Falls Don't Just Happen, ea.	\$9.75	\$9.20			\$8.60			
	#3 Look—Falls Aren't Fun	\$9.75	\$9.20			\$8.60			
	Balloons (100 to a box—Min. order 200)	200-400	500-900	1000-4000	5000-9000	10,000 or more			26
052.92	Balloons, round	\$3.89 per 100	\$3.10 per 100	\$28.00 per M	\$27.00 per M	\$26.00 per M			
052.93	Balloons, Airship	\$3.89 per 100	\$3.10 per 100	\$28.00 per M	\$27.00 per M	\$26.00 per M			
052.94	Balloons, assorted shapes	\$3.89 per 100	\$3.10 per 100	\$28.00 per M	\$27.00 per M	\$26.00 per M			
	Buttons, packed 100 to a box	100-400	500-900	1000-4000	5000-9000	10,000 or more			26
	Min. order 1 box—order in 100 lots only	\$10.00 per C	\$9.00 per C	\$80.00 per M	\$63.00 per M	\$57.00 per M			
044.38	Buttons, packed 1000 to a box								
	Min. order 1 box—order in 1000 lots only	\$10.00 per C	\$9.00 per C	\$80.00 per M	\$63.00 per M	\$57.00 per M			
262.91	Car Cards, min. order 10, ea.	10-29, \$.65; 30-99, \$.45; 100 or more, \$.35							26
		1-9	10-99	100-999	1000 or more				
152.22	Five Minute Safety Talks for foremen, on Falls, ea.	\$.85	\$.67	\$.50	\$.45				26
199.91	Footprints, set of 4; sets ea.	1-9, \$1.00; 10-99, \$.78; 100 or more, \$.67							26
187.95	Gummed Stickers, books of 450, per book	1-9, \$3.00; 10-99, \$2.10; 100 or more, \$1.90							26
187.94	Pennants, sets of 15, per set	1-4, \$2.25; 5-9, \$1.65; 10 or more, \$1.35							26
187.91	Poster Packet Set of 12 A Size Posters, per packet	1-8, \$1.10; \$9-83, \$.76; 84 or more, \$.62							26
187.92	Streamers, ea.	1-9, \$.35; 10-99, \$.29; 100-999, \$.23; 1000 or more, \$.19							26
187.93	Window Display Cards, Minimum order 5 cards, ea.	5-29, \$.75; 30 or more, \$.50							26

Item No.		1 to 9	10 to 99	100 to 999	1,000 to 4,999	5,000 to 9,999	10,000 to 19,999	20,000 or more	Page
029.01	National Directory of Safety Films, ea. ....	1.00	.90	.80	.75	—	—	—	10
091.17	National Safety Calendar .....	Write for price information.							65
	National Safety Council Services .....								24
111.01	National Safety News, Subscription (12 issues), ea. ....	6.50	6.00	5.50	5.25	—	—	—	2
	(Add \$1.00 for foreign, except Canada & Pan American Union)								
111.03	National Safety News, Single issues, ea. ....	1.00	.90	.85	.80	—	—	—	2
112.03	Newsletters, single issues, ea. ....	.20	.13	.092	.072	—	—	—	8
112.01	Newsletters, Subscription (12 issues), ea. ....	2.00	1.70	1.60	—	—	—	—	8
	Including appropriate Current Safety Topics volumes.								
599.33	Nice Going, Popl, ea. ....	.15	.10	.069	.052	.046	.043	.04	33
044.14	No-Accident Award Pins, enamel, ea. ....	.75	.61	.58	.56	—	—	—	51
044.15	No-Accident Award Pins, Personalized, ea. ....	.75	.61	.58	.56	—	—	—	51
	No-Accident Award Buttons, Metal								
044.11	Bronze (1 to 4 years), ea. ....	.52	.36	.32	.31	—	—	—	51
044.12	Silver Plated (5 to 9 years), ea. ....	.53	.37	.33	.32	—	—	—	51
044.13	Gold Plated (10 to 40 years), ea. ....	.54	.38	.34	.33	—	—	—	51
	(Add 10% Federal Excise Tax on Silver and Gold)								
529.30	Off-The-Job Safety Kit, ea. ....	1.00	—	—	—	—	—	—	12



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No. Item	1 to 9	10 to 99	100 to 999	1,000 to 4,999	5,000 to 9,999	10,000 to 19,999	20,000 or more	Page
<b>O</b> 313.01 Operation Safety Kit, Subscription (issued quarterly) ea. ....	\$14.75	\$12.25	—	—	—	—	—	12
313.03 Operation Safety Kit Single issues, ea. ....	4.00	3.35	—	—	—	—	—	12
<b>P</b> Park Lighters .....	See 'Lighter, Park Windproof' in this listing.							53
294.06 Passenger Safety, ea. ....	.20	.13	.092	.067	.058	—	—	35
198.10 Payroll Enclosures—1st 100 Sheets, ea. ....	13.25	—	—	—	—	—	—	49
Additional 100 sheets .....	2.25	—	—	—	—	—	—	49
Pencils .....	1-9	10-49	50-99	100-249	250-499	500-999	1000 or more	
041.12 Ambassador Pencil, ea. ....	\$2.50	2.30	2.14	2.00	1.90	1.84	1.80	52
041.11 Honor Guard Pencil, ea. ....	1.25	1.15	1.07	1.00	.95	.92	.90	52
041.40 Pen Set, single, ea. ....	1 to 3, \$4.30; 4 to 9, \$3.60; 10 to 49, \$3.40							53
No. Item	1 to 9	10 to 99	100 to 999	1,000 to 4,999	5,000 to 9,999	10,000 to 19,999	20,000 or more	Page
Personal Development Pamphlets Series .....	listed alphabetically by title.							17
022.26 Personal Effectiveness (Pers. Development Pamphlet) ea. ....	.35 in any quantity							17
044.22 Personalized Committee Badge, ea. ....	—	.75	.69	.63	—	—	—	51
044.15 Personalized No-Accident Award Pins, ea. ....	.75	.61	.58	.56	—	—	—	51
029.05 Pocket Book of Speech Formulas, ea. ....	.70	.52	.40	.35	—	—	—	16
048.30 Pocket Memo, ea. (Add 10% F.E.T.) .....	.85	.64	.60	.59	—	—	—	52
047.90 Pocket Secretary, ea. (Add 10% F.E.T.) .....	1.05	.84	.80	.79	—	—	—	52
POSTERS—Occupational								
"A" Size Posters (8½" x 11½"):								
182.13 Any Selection, ea. ....	.15	.092	.063	.052	.046	.04	.037	49
"B" Size Posters (17" x 23"):								
182.23 Any selection, ea. ....	.30	.22	.185	.15	.115	.098	.086	49
Jumbo Posters (11" 8" x 9" 11"):								
184.41 Annual Subscription (12 Posters), ea. ....	62.00	59.00	56.00	—	—	—	—	50
184.43 Single issues, ea. ....	6.20	5.90	5.60	—	—	—	—	50
189.01 Poster Directory, ea. ....	.60	.45	.40	—	—	—	—	49
033.02 Poster Electros, ea. ....	3.95	3.65	—	—	—	—	—	49
034.01 Poster Frames—"A"—8½" x 11½", ea. ....	1.35	1.15	1.00	—	—	—	—	49
034.02 Poster Frames—"B"—17" x 23", ea. ....	1.95	1.60	1.30	—	—	—	—	49
151.04 Psychology and The Supervisor, ea. ....	.70	.46	.40	.35	—	—	—	16
151.02 Psychology of Safety in Supervision Set of 6, ea. ....	1.30	1.15	1.05	.98	—	—	—	17
311.01 Public Safety Magazine, Subscription (12 issues), ea. ....	4.50	3.50	2.80	—	—	—	—	12
(Add \$.50 for foreign, except Canada and Pan American Union)								
311.03 Public Safety Magazine, single issues, ea. ....	.60	.45	.35	—	—	—	—	12
399.61 Quit Your Skiddin', ea. ....	.20	.13	.092	.072	.063	.057	.051	34
191.10 Receiving and Shipping Rooms, A.P. # 102 .....	See 'Accident Preventers'.							31
599.61 Safe At Home, ea. ....	.15	.10	.08	.058	.05	.045	.04	33
<b>S</b> 164.01 Safe Builder Subscription (12 issues), ea. ....	.75	.44	.33	.28	.27	.26	.25	28
164.03 Safe Builder, single issues, ea. ....	.10	.07	.035	.028	.027	.026	.025	28
191.10 Safe Clothing, A.P. #301 .....	See 'Accident Preventers'.							32
261.01 Safe Driver, subscription (12 issues), ea. ....	1.00	.76	.58	.485	.455	.425	.40	28
261.03 Safe Driver, single issues, ea. ....	.15	.10	.06	.049	.046	.043	.04	28
122.04 Safe Practices Pamphlets, any selection, ea. ....	.55	.45	.40	.38	—	—	—	7
122.01 Safe Practices Pamphlets, set in binder, ea. ....	8.50	8.00	—	—	—	—	—	7
162.01 Safe Railroader, subscription (12 issues), ea. ....	.75	.44	.33	.28	.27	.26	.25	28
162.03 Safe Railroader, single issues, ea. ....	.10	.07	.035	.028	.027	.026	.025	28
161.01 Safe Worker, subscription (12 issues), ea. ....	1.00	.76	.58	.485	.455	.425	.40	28
161.03 Safe Worker, single issues, ea. ....	.15	.10	.06	.049	.046	.043	.04	28
022.26 Safety and Its Relationship to Personality, (Pers. Development Pamphlet), ea. ....	.35 in any quantity							17
'Safety and the Foreman' film series .....	See film section at end of this listing.							19
Safety Banners, subscription (12 issues)								
188.51 Indoor, Annual, ea. ....	85.00	79.50	76.00	72.50	—	—	—	50
188.61 Outdoor, Annual, ea. ....	96.50	91.00	87.50	84.00	—	—	—	50
188.53 Indoor, single issue, ea. ....	8.50	7.95	7.60	7.25	—	—	—	50
188.63 Outdoor, single issue, ea. ....	9.65	9.10	8.75	8.40	—	—	—	50
Item No.	1 to 9	10 to 99	100 to 999	1,000 to 4,999	5,000 to 9,999	10,000 to 19,999	20,000 or more	Page
032.01 Safety Contest Trophy, ea. ....	28.50	26.50	25.00	—	—	—	—	53
044.51 Safety Desk Flag, Green Cross, ea. ....	1.15	.80	.69	—	—	—	—	48
129.85 Safety Devices and Ideas, Volume I, ea. ....	1.40	1.15	1.05	1.00	—	—	—	10
129.88 Safety Devices and Ideas, Volume II, ea. ....	1.40	1.15	1.05	1.00	—	—	—	10

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Item No.		to 1 9	to 10 99	to 100 999	to 1,000 4,999	to 5,000 9,999	to 10,000 19,999	or 20,000 more	Page
<b>S</b> 411.01	Safety Education Magazine, Subscription (9 issues), ea. (Add \$.50 for foreign, except Canada and Pan American Union)	\$ 3.50	\$ 3.25	\$ 3.10	\$ 3.00	—	—	—	12
129.61	Safety in Quarry Operations, ea.	1.45	1.15	1.00	.90	—	—	—	11
129.95	Safety Inspection Checklist, pads of 50, ea.	1.25	1.00	.90	.85	—	—	—	9
191.04	Safety Instruction Cards, any selection, ea.	.15	.055	.023	.02	—	—	—	7
191.01	Complete Set, including File Case and Guides, ea.	14.50	13.90	13.30	—	—	—	—	7
191.02	Industrial Set, including File Case and Guides, ea.	9.50	8.85	8.25	—	—	—	—	7
192.11	Safety Is No Accident, ea.	.20	.13	.092	.072	.063	.057	.051	29
044.01	Safety Lapel Pin, ea. 'Safety Management for Foremen'	.55	.39	.36	.35	—	—	—	48
	See film section at end of this listing.								23
129.82	Safety Manual For The Graphic Arts Industry, ea.	2.80	—	—	—	—	—	—	11
129.66	Safety Manual for Marine Oil-Fired Watertube Boilers, ea.	1.70	1.45	1.30	1.25	—	—	—	11
599.62	Safety 'Round The Clock, ea.	.15	.07	.052	.04	.035	.032	.03	33
029.04	Safety Slogans from Everywhere, ea.	.65	.40	.35	.30	—	—	—	16
152.01	Safety Talks for Construction and Maintenance Foremen, ea.	1.95	1.75	1.65	1.60	—	—	—	18
952.00	Safety Training Institute Fundamentals of Industrial Safety	95.00	—	—	—	—	—	—	8
	Safety Management Techniques	100.00	—	—	—	—	—	—	8
	Safetygraphs only, any selection, ea.	10.00	9.50	9.25	—	—	—	—	37-40
174.51	How to Lift								
174.52	Bench and Stand Grinders								
174.53	Operating A Power Press								
174.54	Wearing Goggles								
174.55	Plant Housekeeping								
174.56	Ladder Safety								
174.57	Using Fire Extinguishers								
174.58	Accidents Don't Happen								
174.59	Common Hand Tools								
174.60	Preventing Fire								
174.61	Toe Protection								
174.62	Electrical Hazards								
174.63	Industrial Power Trucks								
174.64	Only A Scratch								
174.65	Wanted—Safe Workers								
174.66	Falls								
174.67	Does Your Accident Show?								
174.68	My Aching Back								
174.69	Static Sparks and Flammable Liquids								
174.70	Off-The-Job Safety								
174.71	Save Your Own Skin								
174.72	Chemical Spills and Splashes								
174.73	Two Methods of Artificial Respiration								
174.74	Ramp Safety								
174.75	Two-Wheel Hand Trucks								
174.76	How To Control Bleeding								
174.77	First Aid Treatment for Burns								
174.78	Transportation of Injured Persons								
279.21	Why Back Into Trouble?								
279.22	Your Margin For Safety At Intersections								
174.99	Safetygraph Easels, only, ea.	4.50	4.00	—	—	—	—	—	37-40
174.98	Safetygraph Blanks, only, ea.	3.85	3.35	—	—	—	—	—	37-40
129.91	Safetyman's Library, ea. Sammy Safety Figurines	65.00	—	—	—	—	—	—	9
035.32	Model 1-3D—Sammy, without motion, ea.	46.00	—	—	—	—	—	—	54
035.31	Model 2-3D—Sammy, with motion, ea.	69.00	—	—	—	—	—	—	54
035.33	Model 3-3D—Sammy with lighted Green Cross, ea.	69.00	—	—	—	—	—	—	54
044.02	Sammy Safety Pin, ea.	.85	.70	.65	.63	—	—	—	51
129.83	Showmanship in Safety, ea.	1.40	1.15	1.05	1.00	—	—	—	10
191.10	Skin Care, A.P. #402	See 'Accident Preventers'.							32
399.52	Smart Headwork for Lifesaving Footwork, ea.	.15	.09	.06	.045	.04	.035	.032	34
191.10	Smoking, A.P. #202	See 'Accident Preventers'.							30
	'Speaking of Safety' Film Services	See Film Section at end of this listing.							22
029.03	Speaking Straight-Thinking Straight, ea.	.35	.25	.20	.17	—	—	—	16
192.05	Steps to Safety, ea.	.15	.10	.069	.052	.046	.04	.035	29
151.05	Supervisor's Safety Manual, ea.	3.75	2.90	2.60	2.50	—	—	—	15
151.06	Supervisor's Safety Manual, Instructor's Guide, ea.	.60 (any quantity)							15
	Supervisor Training films	See individual titles listed in film section at the end of this listing.							
<b>T</b> 194.35	Take It Home With You, ea.	.20	.13	.09	.069	.058	.057	.045	33
152.21	Thirty Short Safety Talks for Tailboard Meetings, ea.	1.95	1.75	1.65	1.60	—	—	—	18
051.30	Tie Clasp with Green Cross, ea.	1.25	1.07	1.02	1.01	—	—	—	53
	Training Films	See Film Section at end of this listing.							
032.01	Trophy, Safety Contest, ea.	28.50	26.50	25.00	—	—	—	—	53
<b>W</b> 192.09	What's In It for Me, ea.	.20	.13	.092	.072	.063	.057	.051	29
129.84	Woman On The Job, ea.	1.50	1.20	1.00	.90	—	—	—	10
047.70	Women's Deluxe Billfold, ea. (Add 10%, F.E.T.)	1.25	1.02	.98	.96	—	—	—	52
192.08	Working Together For Safety, ea.	.20	.15	.11	.09	.085	.08	.075	29
<b>Y</b> 399.51	You Are An 'S. P.', ea.	.15	.057	.028	.023	.021	.02	.019	34
294.03	You Factor in Accident Causes—Truck, ea.	.20	.13	.092	.067	.058	—	—	35
294.04	You Factor in Accident Causes—Bus, ea.	.20	.13	.092	.067	.058	—	—	35

All prices shown are subject to a 10% discount to National Safety Council members.

## FILM PRICE SCHEDULE

THE LETTERS "N.R." SHOWN IN THE FILM LISTINGS INDICATE THAT THE FILM IS NOT AVAILABLE FOR RENTAL. IT MAY BE PURCHASED ONLY.

Sale Item Number	Rental Item Number	INDUSTRIAL TRAINING FILMS	Single Copy	2 to 9	10 or more	Rental	Page
171.85	172.85	All Out For Safety, 16mm, black and white, ea.	\$ 65.00	\$ 62.00	\$ 60.00	\$ 10.00	21
171.38	172.38	An Accident Happens To Sam, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	42
171.39	172.39	An Accident Happens To Sam, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	42
171.82	—	Bar It Down, 35mm, color, silent, ea.	16.50	15.50	15.00	N.R.	46
171.60	—	Blasting Safely in Mines, 35mm, silent, black and white, ea.	16.50	15.50	15.00	N.R.	46
141.01	149.01	Brain Beats Brawn, 35mm, black and white, ea.	16.50	15.50	15.00	5.75	23
171.62	—	Building Construction Safety, 35mm, silent, black and white, ea.	16.50	15.50	15.00	N.R.	46
143.01	149.03	Butterflies in Your Stomach, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	22
145.12	149.10	Call 'Em On The Carpet, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	21
145.02	149.09	Call 'Em On The Carpet, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	21
141.02	149.01	Cause and Cure, 35mm, black and white, ea.	16.50	15.50	15.00	5.75	43
171.05	172.05	Cause for Alarm, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	44
171.06	172.06	Cause for Alarm, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	44
278.18	278.68	Champ Becomes Deaf and Blind, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	47
278.24	278.74	Champ Becomes Deaf and Blind, 16mm, color, ea.	105.00	100.00	97.00	20.00	47
171.63	172.63	Construction Equipment Safety, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	45
171.49	172.49	Decide To Be Safe, 35mm, black and white, ea.	16.50	15.50	15.00	5.75	42
171.55	172.55	Decide To Be Safe, 16mm, black and white, ea.	52.00	49.50	48.00	10.00	42
278.01	278.51	Defensive Driving, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	46
141.03	149.01	Doctor's Orders, 35mm, black and white, ea.	16.50	15.50	15.00	5.75	23
171.88	172.88	Down at the Office, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	41
171.07	172.07	Easy on the Eyes, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	43
171.08	172.08	Easy on the Eyes, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	43
142.02	149.02	Everybody's Different, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	20
146.01	149.12	Fact Finding Not Fault Finding, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	19
146.11	149.13	Fact Finding Not Fault Finding, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	19
171.09	172.09	Fall Guy, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	44
171.66	172.66	Falling Ground, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	46
171.10	172.10	Fifteen Minutes to Go, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	43
171.11	172.11	Fire, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	44
141.05	149.01	Follow the Leader, 35mm, black and white, ea.	16.50	15.50	15.00	5.75	23
171.12	172.12	For Safety's Sake, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	44
146.02	149.12	Foresight Not Hindsight, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	19
146.12	149.13	Foresight Not Hindsight, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	19
145.11	149.10	Fragile—Handle Feelings with Care, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	21
145.01	149.09	Fragile—Handle Feelings with Care, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	21
171.13	172.13	Freight Handling Safety, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	44
171.14	172.14	Freight Handling Safety, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	44
171.86	172.86	Friendly Machines, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	41
171.87	172.87	Friendly Machines, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	41
171.48	172.48	Get A Grip on Yourself, 35mm, black and white, ea.	16.50	15.50	15.00	5.75	42
171.54	172.54	Get A Grip on Yourself, 16mm, black and white, ea.	52.00	49.50	48.00	10.00	42
171.15	172.15	Giant Hands of Industry, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	45
144.01	149.04	Gray Day for O'Grady, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	21
144.02	149.05	Gray Day for O'Grady, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	21
171.16	172.16	Grime Doesn't Pay, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	44
141.04	149.01	Guard Duty, 35mm, black and white, ea.	16.50	15.50	15.00	5.75	23
171.17	172.17	Handle with Care, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	44
142.00	149.02	Human Factors in Safety, set of 6 films, 35mm, black and white, set ea.	132.00	125.00	118.00	N.R.	20
278.02	278.52	If It Happens, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	46
171.83	172.83	If You Took Your Family to Work, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	42
171.84	172.84	If You Took Your Family to Work, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	42
145.13	149.10	It's An Order, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	21
145.03	149.09	It's An Order, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	21
171.67	—	Jackhammer Safety, 35mm, silent, black and white, ea.	16.50	15.50	15.00	N.R.	46
171.68	172.68	Keep 'Em Rolling, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	45
171.19	172.19	Keep It Clean, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	43
143.02	149.03	Key to Good Speaking, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	22
171.69	172.69	Laboratory Glassware, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	45
171.20	172.20	Learn and Live, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	43
171.47	172.47	Let Habit Help, 35mm, black and white, ea.	16.50	15.50	15.00	5.75	42
171.53	172.53	Let Habit Help, 16mm, black and white, ea.	52.00	49.50	48.00	10.00	42
171.70	172.70	Men and Motive Power, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	45
171.71	172.71	Men of Maintenance, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	45
171.72	172.72	Minute Men, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	45
171.21	172.21	My Eye Deal, 35mm, color, ea.	32.50	31.00	30.00	5.75	44
278.15	278.65	Ninety Day Flash, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	47
278.21	278.71	Ninety Day Flash, 16mm, color, ea.	105.00	100.00	97.00	20.00	47
171.22	172.22	No Laughing Matter, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	43
146.03	149.12	No One Else Can Do It, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	19
146.13	149.13	No One Else Can Do It, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	19
143.03	149.03	Now You're Talking, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	22

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Sale Item Number	Rental Item Number	INDUSTRIAL TRAINING FILMS	Single Copy	2 to 9	10 or more	Rental	Page
143.04	149.03	On Your Feet, 35mm, black and white, ea.	\$23.50	\$22.50	\$21.25	\$5.75	22
171.23	172.23	Open for Infection, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	44
171.80	172.80	Operating Heavy Duty Trucks Safely, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	45
142.01	149.02	People Are All Alike, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	20
171.44	172.44	Personal Side of Safety, 35mm, black and white, set of 5 films, set, ea.	80.00	75.00	72.50	N.R.	42
171.50	172.50	Personal Side of Safety, 16mm, black and white, set of 5 films, set, ea.	235.00	225.00	220.00	N.R.	42
144.03	149.06	Pick Your Safety Target, 35mm, color, ea.	32.50	31.00	30.00	5.75	21
144.04	149.07	Pick Your Safety Target, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	21
144.05	149.08	Pick Your Safety Target, 16mm, color, ea.	105.00	100.00	97.00	20.00	21
278.03	278.53	Pilots of the Highway, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	46
143.05	149.03	Power of Speech, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	22
141.06	149.01	Principles and Interest, 35mm, black and white, ea.	16.50	15.50	15.00	5.75	23
141.07	149.01	Production with Safety, 35mm, black and white, ea.	16.50	15.50	15.00	5.75	23
278.14	278.64	Professional Safe Driving Series, 16mm, black and white, set of 5 films, set ea.	300.00	290.00	185.00	N.R.	47
278.20	278.70	Professional Safe Driving Series, 16mm, color, set of 5 films, set ea.	485.00	470.00	460.00	N.R.	47
278.04	278.54	P. U. D. Driver Wins Again, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	46
141.08	149.01	Right Dress, 35mm, black and white, ea.	16.50	15.50	15.00	5.75	23
143.06	149.03	Ring the Bell, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	22
171.24	172.24	Rules for Tools, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	44
171.25	172.25	Safe All Around, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	49
171.43	172.43	Safe As You Make It, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	49
171.26	172.26	Safe Handling of Drums, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	—
171.74	—	Safe Handling of Materials, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	43
171.27	172.27	Safe Haulage in Coal Mines, 35mm, silent, black and white, ea.	16.50	15.50	15.00	N.R.	46
144.06	—	Safe in Hand, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	43
146.00	—	Safety Doesn't Happen, 16mm, black and white, ea.	65.00	62.00	60.00	Free Loan	21
146.10	—	Safety and the Foreman, set of 4 films, 16mm, black and white, set ea.	240.00	230.00	225.00	N.R.	19
171.75	172.75	Safety and the Foreman, set of 4 films, 35mm, black and white, set ea.	85.00	82.00	80.00	N.R.	19
142.03	149.02	Safety We Work, 35mm, black and white, ea.	10.00	9.50	9.00	Free Loan	45
141.09	149.01	Safety Case Histories, 35mm, black and white, ea.	32.50	31.00	30.00	5.75	20
141.00	149.01	Safety Is In Order, 35mm, black and white, ea.	16.50	15.50	15.00	5.75	23
171.45	172.45	Safety Management For Foremen, set of 10 films, 35mm, black and white, ea.	190.00	180.00	165.00	N.R.	23
171.51	172.51	Safety Record, 35mm, black and white, ea.	16.50	15.50	15.00	5.75	42
171.76	172.76	Safety Record, 16mm, black and white, ea.	52.00	49.50	48.00	10.00	42
142.04	149.02	Sawmill Safety, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	45
278.16	278.66	Secret of Supervision, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	20
278.22	278.72	Skill Is Your Business, 16mm, black and white, ea.	52.00	49.50	48.00	10.00	47
278.11	278.61	Skill Is Your Business, 16mm, color, ea.	105.00	100.00	97.00	20.00	47
278.12	278.62	Smooth Operation, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	46
171.90	172.90	Smooth Operation, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	46
171.91	172.91	So You're New Around Here, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	41
143.00	149.03	So You're New Around Here, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	22
141.10	149.01	Speaking of Safety, set of 6 films, 35mm, black and white, set ea.	132.00	125.00	118.00	N.R.	23
171.29	172.29	Stop, Look and Listen, 35mm, black and white, ea.	16.50	15.50	15.00	5.75	23
171.30	172.30	Stop the Fire Thief, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	43
145.10	149.10	Stop the Fire Thief, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	43
145.00	149.09	Supervising for Safety, set of 3 films, 35mm, black and white, set ea.	65.00	62.00	60.00	N.R.	21
278.17	278.67	Supervising for Safety, set of 3 films, 16mm, black and white, set ea.	180.00	170.00	165.00	N.R.	21
278.23	278.73	Take A Look At The Odds, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	47
171.57	172.57	Take A Look At The Odds, 16mm, color, ea.	105.00	100.00	97.00	20.00	47
171.56	172.56	Take Time To Live, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	42
142.05	149.02	Take Time To Live, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	42
142.06	149.02	Teaching Safety On The Job, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	20
171.46	172.46	Teamwork for Safety, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	20
171.52	172.52	To Your Health, 35mm, black and white, ea.	Write for information.	Free Loan			46
171.89	172.89	Two Steps To Safety, 35mm, black and white, ea.	16.50	15.50	15.00	5.75	42
278.19	278.69	Two Steps To Safety, 16mm, black and white, ea.	52.00	49.50	48.00	10.00	42
278.25	278.75	Vacation Safety, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	41
146.04	149.12	Watch Your Handicap, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	47
146.14	149.13	Watch Your Handicap, 16mm, color, ea.	105.00	100.00	97.00	20.00	47
171.35	172.35	What They Don't Know Can Hurt, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	19
171.36	172.36	What They Don't Know Can Hurt, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	19
171.37	172.37	What's Your Safety I.Q.? 35mm, black and white, ea.	23.50	22.50	21.25	5.75	43
171.00	172.00	What's Your Safety I.Q.? 16mm, black and white, ea.	65.00	62.00	60.00	10.00	43
171.01	—	Worker Film Training Series, 35mm, black and white, set of 10 films	200.00	193.00	187.00	N.R.	43
171.01	—	Any 9 films in series	192.00				
171.01	—	Any 8 films in series	171.00				
171.01	—	Any 7 films in series	150.00				
171.01	—	Any 6 films in series	132.00				
171.01	—	Any 5 films in series	113.00				
171.79	172.79	Woven With Safety, 35mm, black and white, ea.	23.50	22.50	21.25	5.75	45
171.40	172.40	You Can Take It With You, 35mm, color, ea.	32.50	31.00	30.00	5.75	42
171.41	172.41	You Can Take It With You, 16mm, black and white, ea.	65.00	62.00	60.00	10.00	42
171.42	172.42	You Can Take It With You, 16mm, color, ea.	105.00	100.00	97.00	20.00	42



## SERVICE GUIDE 2.1

March 1956

### OCCUPATIONAL SAFETY SERVICES, MATERIALS AND PUBLICATIONS



# National Safety Council

March 1956  
National Safety News  
Vol. 73, No. 3, Section 2  
Chicago, Illinois

## *the National Safety Council*

A non-profit organization dedicated to accident prevention  
Chartered by Act of Congress

Throughout its 43 year existence an important function of the National Safety Council has been compilation and dissemination of occupational safety services and materials. In preparing the materials shown in this Service Guide, the Council has attempted to incorporate the most modern teaching and interest-building methods; the most up-to-date technical information. It has utilized the talents of safety specialists, human relations experts, engineers, publicity and public relations people, and the vast resources offered by its membership of over 12,000 organizations, and individuals. Special tribute must be given to the more than 2500 volunteer workers who serve on policy making committees, advise on technical matters, and contribute much by way of help and information. The officers and members of the three committees most actively concerned with the materials shown in the Service Guide, are listed below.

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### *Other Council Service Guides*

For other safety services and materials, consult the following Council Service Guides: Commercial Vehicle, S.G. 106.1; School and College, S.G. 2.3; Traffic, S.G. 2.4; Farm, S.G. 2.5; Home, S.G. 2.6

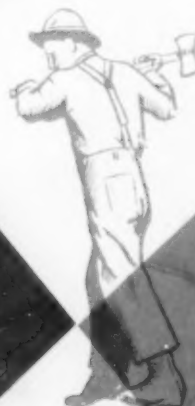
#### *Spanish and Portuguese Language Safety Services*

Organizations employing Spanish or Portuguese speaking workers, or having subsidiaries in Latin America, may obtain many Spanish and Portuguese language technical and training materials from the Inter-American Safety Council. In addition, if desired by the member, the Inter-American Safety Council will supply Latin American subsidiaries with any of the National Safety Council's English language publications. Inquiries and orders should be addressed to: Inter-American Safety Council, 2 Rector Street, New York 6, N. Y.

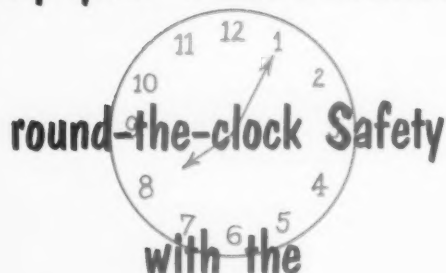


## NATIONAL SAFETY COUNCIL

425 N. Michigan Ave., Chicago 11, Ill.



Help your workers achieve



# national safety calendar

the nation's Number 1  
safety training aid

The National Safety Calendar is given to more employees, by more companies, than any other of the 4000 items produced by the National Safety Council. And there's a good reason for this popularity—the 'round-the-clock safety fostered by these bright training aids plays a big part in creating a successful safety program.

- \* Nearly 3 out of 5 accidents occur during the off-the-job part of the work day—and your company foots the bill in lost manhours. 'Round-the-clock safety helps cut down off-the-job accidents!
- \* Workers trained in 'round-the-clock safety are more safety minded all of the time—have fewer accidents on the job!
- \* 'Round-the-clock safety education pays a big, extra dividend in employee loyalty and good will toward your company!



Showing Off Can Cause Trouble

JANUARY 1957						
SUN	MON	TUE	WED	THU	FRI	SAT
1 NEW YEAR'S DAY	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

It's not the RIGHT way if it isn't SAFE  
NATIONAL SAFETY COUNCIL



The National Safety Calendar is the one training aid you can put in your employees homes that will work for you day after day for a solid year. 12 full color, whimsical safety picture-reminders, and 12 pages of sound safety tips. Families that look to the National Safety Calendar know more about safety . . . think more about safety—at work, at play, in traffic, in the home.

## MONTHLY CASH PRIZE CONTESTS

Only employees, and their families, of organizations which are members of the National Safety Council, are eligible to try their hands at the big monthly "save-a-life line" contest which is a feature of the National Safety Calendar. It's easy for them to enter—they just write a rhyming last line for the limerick on the back of each calendar page, and send them in. And since the limericks are about safety—the employee and his family give that much more time and attention to thoughts of accident prevention. Plan now, to let the National Safety Calendar double the scope of your safety program. Write for full details.



## **Administrative Publications . . . . . Pages 1-13**

The technical and administrative materials shown on these pages provide the safety man with fundamental technical reference tools for his job. They cover the entire spectrum of occupational safety data; they offer authoritative guidance on employee training and supervisor development methods.

Administrative publications are also ideal for winning the active support and participation of various levels of management. Check over the names in your management group, including personnel at branch plants, and keep them active in your safety program with a regular flow of timely, pertinent, safety information that whets their interest and wins their support to your accident prevention efforts.

## **Supervisor Training . . . . . Pages 14-22**

Your supervisors and foremen are the key men in your safety program—the management people nearest the accident 'firing line'. They give most of the job instruction; they are responsible for the detection and correction of unsafe conditions and practices; the development of right attitudes toward safety, on the part of workers, is largely dependent upon them. The materials shown in the Supervisor Training section are among the most widely used by American industry to equip foremen to handle their safety responsibilities effectively. They teach your foremen the fundamentals of accident prevention as it relates to their jobs, they build interest in safety by showing how it boosts production and improves morale, they give your foremen a basic understanding of human relations and show how to use this knowledge on the job.

## **Employee Training . . . . . Pages 24-56**

A well planned, continuous use of employee education publications and promotional material is a basic part of any safety program . . . for it is at the employees themselves that the bulk of the program is aimed. Frequent use of the materials shown in this section will add impact to your safety training—will help to stimulate and hold worker interest, shape sound attitudes and win increased cooperation. Most important of all, these materials are designed to do a job of reminding; to keep employees thinking and selling themselves on the benefits of doing things the safe way.

## **Index and price list . . . . . Pages 57-64**

A red asterisk (\*) before the title of a publication, indicates new material, produced within the last year.



*the HEART of your Safety Program*

## National SAFETY NEWS

A NEWS subscription brings far more than even 12 issues of the most authoritative publication in the occupational safety field. It also sends to each subscriber's desk a steady flow of samples and suggestions for effective use of the Council's many materials. While the NEWS itself is a real 'bread and butter' publication for the safety man, the wealth of materials provided with each subscription can be an effective safety selling tool, pumping the lifeblood of interest and action to the nerve centers of your organization.

**A NEWS SUBSCRIPTION OFFERS 12 ISSUES OF THE FOREMOST MAGAZINE IN SAFETY . .**

Feature articles provide useful, technical information prepared by professional safety specialists—methods tested and proved by actual use. Each issue will give you dozens of answers to many of your problems.

**DOZENS OF HELPFUL FEATURES IN EACH ISSUE**

Regular, monthly departments of special interest to management, medical directors, plant managers and other personnel who can help make your safety program a success.

**7 SPECIAL ISSUES**

In February, May, August, and November, the NEWS includes the AMERICAN SOCIETY OF SAFETY ENGINEERS JOURNAL section—20 pages of the latest technical safety data for engineers. In March, the giant Safety Equipment Issue is your buying guide for the newest and best in safety equipment. In June, the NEWS contains a bound-in copy of the National Directory of Safety Films—descriptions and sources of over 1,100 films. And in October, the annual Safety Congress Issue fills you in on the happenings at the biggest safety event of the year.

**A CONTINUOUS FLOW OF PROGRAM HELPS**

NEWS subscribers automatically receive copies of the Council's Service Guide 2.1, the Directory of Occupational Safety Posters, and the 'Fight for Life', a study of progress in the safety movement. And they receive a continuous flow of sample training booklets and materials accompanied by literature offering how-to-use suggestions.

Arrange for personal subscriptions for yourself, for every key executive, and for all safety personnel in outlying plants and installations. National Safety News is the Heart of your safety program.



**... is the biggest, most comprehensive collection of information yet offered to the safety man!**

Recognized as the most authoritative and complete work existing on the subject of safe practices for industry, the ACCIDENT PREVENTION MANUAL is regarded by thousands of safety men as the foundation for any safety program. No other single source provides such a vast fund of practical information in so comprehensive a form—ready for instant use in solving problems, eliminating guesswork, furnishing facts.

Only the resources of the National Safety Council could produce such a volume as this—literally an encyclopedia of safety, written and compiled by Council Safety Engineers and by experts from many phases of industry... reviewed and edited by hundreds of authorities from business, industry and government. 3 years in the making, this new, 3rd edition presents such a spectacular expansion of contents, that it renders all previous editions obsolete. 43 sections—1341 pages—filled with charts, illustrations, facts and figures on every common type of accident and health hazard... cross indexed to permit you to find any item of information in mere seconds.

The ACCIDENT PREVENTION MANUAL belongs on the desk of every man in your organization who has an administrative responsibility for your safety program... it belongs in the hands of every key member of your safety staff in every location. It is the Safety Engineer's handbook—the major reference book for any professional worker in industry accident prevention.

the new, 3rd edition of the

# ACCIDENT PREVENTION MANUAL

## THE 43, FACT-FILLED SECTIONS OF THE ACCIDENT PREVENTION MANUAL

1. Basics of Safety
2. Safety Organizations
3. Safety Committees
4. Removing the Hazard from the Job
5. Human Behavior and Industrial Safety
6. Safety Education
7. Maintaining Employee Interest in Safety
8. Public Relations and Publicity for Safety
9. Accident Records and Injury Rates
10. Accident Investigations, Analysis and Costs
11. Workmen's Compensation Insurance
12. Sources of Help for the Safety Man
13. Industrial Buildings and Plant Layout
14. Plant Construction and Maintenance
15. Boilers
16. Pressure Vessels
17. Refrigeration Equipment
18. Handling and Storage of Materials
19. Hoisting Apparatus and Conveyors
20. Elevators and Plant Railroads
21. Power Trucks and Tractors
22. Ropes, Chains and Slings
23. Principles of Guarding and Transmission Guards
24. Metal Forming and Shearing
25. Machine Tools
26. Woodworking Machinery
27. Guarding Equipment in Selected Industries
28. Local Exhaust Systems and Ventilating
29. Welding and Cutting
30. Hand and Portable Power Tools
31. Electrical Hazards
32. Flammable Liquids
33. Fire Prevention
34. Fire Extinguishment and Control
35. Emergency Action Plans
36. Personal Protective Equipment
37. Industrial Sanitation and Personnel Facilities
38. Medical, Nursing, and First-Aid Services in Industry
39. Industrial Hygiene
40. Industrial Poisons
41. Table of Chemical Hazards
42. Motorized Equipment
43. Safety Engineering Tables

**Build-in SAFETY**—quickly . . . easily . . . inexpensively

# Detail Sheets

When the need arises for the immediate construction of a scaffold, ladder, tool rack, safety device, or any temporary structure which has to be built on the job—Detail Sheets save time, money, and help you do a sound job of safety engineering in getting them built. Any competent workman can easily follow these clearcut, working drawings. They sweep away all guesswork, need for lengthy instructions, sloppy workmanship that can cause accidents. With Detail Sheets, you'll get it built faster, cheaper, better. And anything built from a Detail Sheet has safety built-in.

8 1/2" x 11" in size, Detail Sheets are available singly, or as a complete set of 131 drawings in a sturdy 3 ring binder. The full list of subjects available is shown below.

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# Safe Practices Pamphlets

Detailed studies of important accident and health problems, 8 1/2" x 11" in size, 8 to 12 pages in length. At one time Safe Practices Pamphlets consisted of nearly 100 titles, but many have been withdrawn as their subjects were given complete coverage in successive issues of the Accident Prevention Manual. The present total of 19 titles, consists of subjects which are not fully covered in the 3rd edition of the Manual.

The General Pamphlet Set, consisting of Safe Practices Pamphlets and Health Practices Pamphlets is available in a 3 ring binder. The Industrial Safety Series Pamphlets are also available in a 3 ring binder. Selected pamphlets in any set may be ordered individually in any quantity.

## Safe Practices Pamphlets

- 1 Ladders
- 12 Scaffolds
- 21 Industrial Accident Records and Analysis
- 44 Cutting Oils and Emulsions
- 60 Chemical Laboratories
- 75 Safety Inspections
- 80 Industrial Safety Rules
- 91 Spray Coating
- 93 Topics for Safety Meetings
- 95 Compressed Gases
- 102 Off the Job Accidents
- 108 Office Safety

## Industrial Safety Series Pamphlets

- AU. 1 Heat Treating
- Chem. 1 Chemical Pipe Lines and Tanks
- Chem. 2 Fume Poisoning from Nitric and Mixed Acids
- Chem. 3 Chemical Burns
- Chem. 5 Pyroxylin Lacquer Manufacture
- Chem. 6 Cyanide Compounds
- Chem. 7 Industrial Waste Disposal
- Con. 1 Building Construction
- Con. 3 Excavation Work
- Con. 4 Pile Driving
- Con. 5 Demolition of Structures
- Food 6 Distilleries—Grain Handling and Milling
- Food 7 Distilleries—Mashing, Fermenting, Distilling and Stillage Drying
- Food 8 Distilleries—Warehousing and Bottling

- Hy. 1 State Highway Employees
- Mun. 1 Public Employees
- PP 1 Paper and Pulp Mills
- PP 2 Paper Box Manufacturing
- PP 3 Pulpwood Logging
- PU 1 Protecting Public Employees on Streets and Highways
- PU 3 Linemen's Rubber Protective Equipment
- PU 4 Handling of Poles
- RR 1 Railroad Track Cars
- RU 1 Compounding materials used in the Rubber Industry
- RU 2 Vulcanizers and Devulcanizers
- Tex. 1 Cotton Mills
- CE 1 Mercantile Establishments

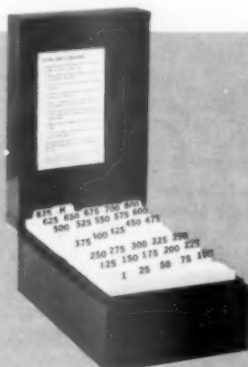
## Health Practice Pamphlets

- 3 Lead
- 4 Industrial Dust
- 10 Skin Affections
- 13 Physical Defects
- 16 Physical Medicine in Industry

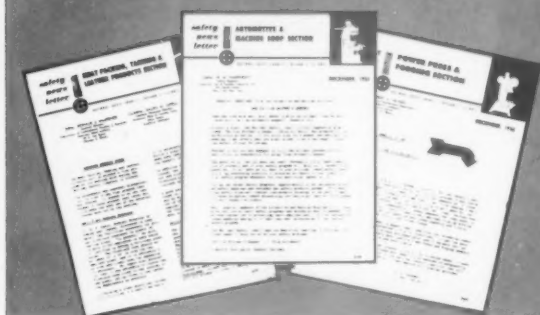
## Safety Instruction Cards

These 3" x 5" cards are concise check lists of safe practices and accepted methods of performing specific operations. They are invaluable for preparing job analyses, writing speeches and articles, planning safety meetings.

The Complete Set consists of approximately 735 cards, including motor transportation and off-the-job safety subjects, a 2-way index, a set of numerical dividers and a metal file case. The smaller Industrial Set contains approximately 500 cards of interest to all industry, plus the Special Industry cards that pertain to the purchaser's operations. A Non-Industrial Set also may be ordered as a separate item. See Service Guide 5.2 for a listing of the subjects included in the three sets.



## NEWSLETTERS

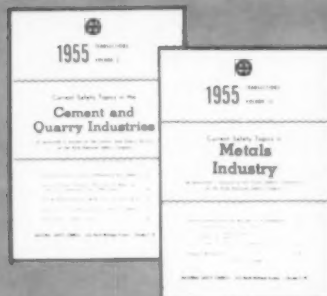


Newsletters are the safety idea swap shops for various industries with specialized problems. Edited by volunteers from each group, they provide you with a valuable source of information slanted to your own operations—new methods and equipment, novel safety promotional stunts and gadgets, recent technical developments, plus news of Section meetings, projects, people.

Monthly Newsletters are particularly helpful to organizations with diversified operations or scattered locations. You can select Newsletters to match specific operations; address subscriptions directly to key personnel at each location—your nurses, plant managers, training personnel, maintenance foremen, transportation supervisors, and safety engineers. Four pages, 8 $\frac{3}{8}$ " x 10 $\frac{7}{8}$ ". Newsletters are published monthly for the following:

Aeronautical Industries  
Air Transport  
Automotive and Machine Shop  
Cement and Quarry  
Chemical  
Coal Mining  
Commercial Vehicle  
Construction  
Electrical Equipment  
Fertilizer  
Food  
Glass and Ceramics  
Hospital Safety Service  
Marine  
Meat Packing, Tanning and Leather Products  
Metals  
Mining (other than coal)  
Occupational Health Nursing  
Petroleum  
Power Press and Forging  
Printing and Publishing  
Public Employee  
Public Utilities  
Pulp and Paper  
Railroad  
Rubber  
Textile  
Trades and Services:  
    Mercantile and Warehousing  
    Restaurants  
Transit  
Wood Products

## CONGRESS TRANSACTIONS



TRANSACTIONS are 30 pamphlet size volumes which record the happenings at each of the sessions of the National Safety Congress. They are condensations of the exchange of ideas and the wealth of helpful facts which are offered by speakers and panel members who participate. They will keep you and your management group fully informed on the latest in accident prevention ideas and methods. They provide a rich source of ideas for your own safety program, and can provide answers to problems of unusual nature arising in specialized industries.

### SAVE 45%

To encourage more widespread knowledge of the various fields of safety, the Complete Set of 30 volumes may be ordered for little more than 1/2 the cost of the individual volumes.

### LIST OF VOLUMES

General Sessions and Detailed Index to all Volumes  
Aviation: Aeronautical Industries Section  
    Air Transport Section  
Cement and Quarry Industries  
Chemical Industries  
Coal Mining Industry  
Construction Industry and Public Employment (Public Employee Section)  
Electrical Equipment Industry and Public Utilities  
Farm Safety  
Fertilizer Industry  
Food and Meat Packing and Leather Industries  
Glass and Ceramics Industry  
Home Safety  
Industrial Subject Sessions (Sponsored by ASSE)  
Maritime Industries (Marine Section)  
Metals Industry  
Metals Products Industries (Automotive and Machine Shop Section Power Press and Forging Section)  
Mining Industry  
Motor Transportation Industry (Commercial Vehicle Section)  
Occupational Health Nursing Section  
Petroleum Industry  
Printing and Publishing Industry  
Pulp and Paper Industry  
Railroad Industry  
Rubber Industry  
School and College Safety  
Textile Industry  
Traffic Safety  
Transit Industry  
Wood Products Industry  
Early Morning Sessions, "Communication and Safety"

## SAFETY TRAINING INSTITUTE



A 5 day basic training and refresher course in the elements of industrial accident prevention, taught by some of the most experienced safety specialists in the nation. In its 6 year existence, this course has graduated more than 1600 safety men—receiving from them and their employers the highest of praise. It is recognized as the basic step in getting new safety personnel thoroughly grounded in their work, as well as being a top-notch brush up course for veteran safety men. Write for information.



#### ACCIDENT FACTS

The most complete and authoritative source of accident statistics. This annual roundup of facts and figures on accidents in every field of safety puts the answers at your finger tips. It's easy to use, easy to understand. Normally released in July, each issue contains over 100 pages of information on the accident picture for the previous year. 6" x 9".



#### LIST OF PAMPHLETS

Automobile, Aircraft Manufacturing, Railroad Equipment, Shipbuilding  
Chemical, Rubber  
Communications, Electric Utilities, Gas Utilities  
Construction  
Iron & Steel Products, Sheet Metal, Non-Ferrous Metals  
Lumber, Wood Products  
Machinery, Electrical Equipment  
Food, Meat Packing, Leather, Tobacco  
Mining, Quarry, Cement, Glass, Clay Products  
Petroleum  
Pulp & Paper, Printing & Publishing  
Steel, Foundry  
Textile  
Trade, Service, Miscellaneous Manufacturing  
Transit, Air Transport, Marine Transport, Storage & Warehousing

#### ACCIDENT RATES PAMPHLETS

These pamphlets review the accident experience of about 200 industries and about 30 general groups annually. The pamphlet for your industry will enable you to compare your company's accident frequency and severity rates with those of other companies doing similar work. Size 5 1/2" x 8 1/2".

#### ACCIDENT RECORD FORMS

For use in recording, reporting, and analyzing various types of accidents. Please use both number and name of form when ordering. Sample copy free on request.

- IS-1A—Supervisor Accident Report (8 1/2" x 11" 2 sides).
- IS-3 —Industrial Employee Injury Record (4" x 6" 1 side card).
- IS-4 —Industrial Injury Summary (8 1/2" x 11" 2 sides).
- IS-5A—Monthly Summary of Industrial Injuries (8 1/2" x 4" 1 side).
- IS-6 —A First Aid Report Form. In pads of 100. (Size 4" x 6").
- IS-7 —Department Supervisor's Accident Cost Report (8 1/2" x 11" 1 side).
- IS-8 —Investigator's Cost Data Sheet (8 1/2" x 11" 2 sides).

#### ACCIDENT ANALYSIS CHART

For use by small plants, hotels and other service industries to record frequency rates and general accident history of the organization. Printed 2 sides, in pads of 50. 8 1/2" x 11".

#### SAFETY INSPECTION CHECK LIST

A check list of safe and unsafe conditions. Reverse side blank for making detailed comments or recommendations. Size 8 1/2" x 11". In pads of 50.

#### GRAPHIC ARTS INDUSTRY SAFETY TRAINING COURSE

A kit of materials designed to provide a basis of instruction of safe practices for the Graphic Arts Industry.

#### FLEET SAFETY MEMOS

- 2. Fleet Safety Posters, 1950.
- 3. Publicity Procedure When Presenting Safe Driver Awards, 1950.
- 10. Protective Coloring for Commercial Vehicles, 1950.
- 13. Safety Meetings for Commercial Drivers, 1950.
- 18. Investigating Commercial Vehicle Accidents, 1950.

#### HOSPITAL SAFETY SERVICE

An accident and fire prevention service jointly sponsored by the AHA and NSC, for AHA members. Provides the basic materials and techniques for a sound, practical safety program. Write for information.

#### FLEET RECORD FORMS

Record forms, prepared specifically for the Motor Transportation Industry, to enable them to quickly record and analyze complete accident experience. Order by number and title.

- VEH-1 Driver's Accident Report (8 1/2" x 11"—2 sides).
- VEH-2 Accident Report Packet (4 3/4" x 8"—2 sides).
- VEH-3 Driver Record Card (8 1/2" x 11"—2 sides).
- VEH-4 Motor Transportation Accident Analysis (8 1/2" x 11"—1 side).
- VEH-5 Motor Transportation Accident Analysis (Long Form) (11" x 16 1/2"—1 side).
- VEH-6 Award and Accident Record (5" x 6"—2 sides).
- VEH-10 Safe Driver Award Record Card (10 1/4" x 16"—1 side).
- VEH-12 Witness Card (3" x 5"—1 side).

#### SAFETYMAN'S LIBRARY

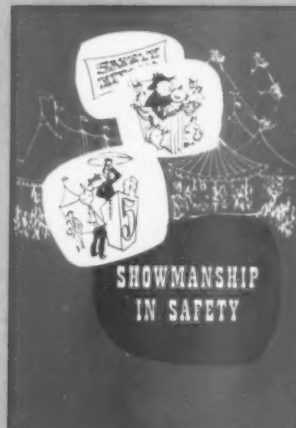
A complete library of the Council's most frequently needed reference publications. Included are the new, 1341 page Accident Prevention Manual; the complete set of Industrial Data Sheets in 2 binders; the full set of Detail Sheets in a binder; complete set of the General Safe Practices Pamphlets; and a set of Safety Instruction Cards in a file case. This Safetyman's Library is available at 10% less than the total cost of all the items included.





### HOW TO START A SAFETY PROGRAM

Defines the organization of a simple and economical safety program—not the engineering details but the management of an efficient program. Describes what to do first to control such problems as health, personal injuries. Applicable to any business enterprise, regardless of size. 48 pages, 4 1/2" x 7".



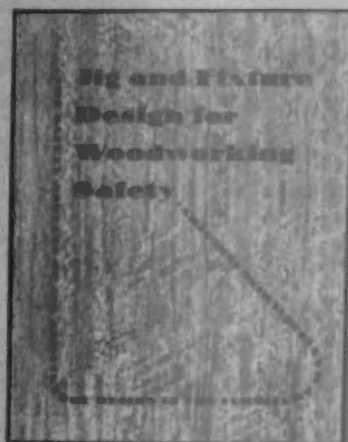
### SHOWMANSHIP IN SAFETY

Here are 160 of the brightest, most unusual and most successful safety promotional ideas of the last 40 years. Old or new, you're bound to find loads of attention-getting gimmicks for publicity stunts, peppering up safety meetings, getting bulletin boards looked at. 64 pages, 5 1/2" x 8".



### NATIONAL DIRECTORY OF SAFETY FILMS

A comprehensive listing of 1,100 motion pictures and slidefilms, both sound and silent, for safety education within business and industry, on the farm, in homes, and on the streets and highways. Sources and basis of availability shown for each film. 68 pages, 8" x 11".



### JIG AND FIXTURE DESIGN FOR WOODWORKING SAFETY

An extremely comprehensive book for supervisors dealing with all types of woodworking jigs and fixtures. Complete description of the various kinds of jigs and fixtures with precise instructions on how to build and use them. 61 excellent drawings. 104 pages, 8 1/2" x 11".



### SAFETY DEVICES AND IDEAS

Two 48 page books which present more than 200 tested, easy to make safety devices. As most of the items described were planned and constructed by plant personnel, they are not commercially available. Illustrated. 8 1/2" x 11".



### THE WOMAN ON THE JOB

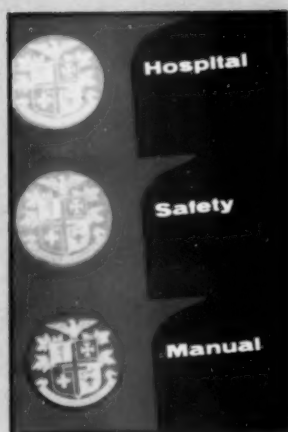
A survey of the health and safety problems of women in industry. Of real help to Personnel and Training Directors as well as safety men. Covers accidents and occupational diseases, physical problems, job clothing, placement, training and supervision. Hard cover, with illustrations. 6" x 9".





#### MANUAL OF ACCIDENT PREVENTION IN CONSTRUCTION

Especially written by the Associated General Contractors of America for construction superintendents and foremen. Illustrates the safe way of performing construction jobs, emphasizes the costly results of unsafe practices. Newly added sections on welding, power saws, flammable gases, etc., drawings and charts. 258 pages, 6 1/4" x 9 1/4".



#### HOSPITAL SAFETY MANUAL

A guide for use by hospital administrators and department heads to help in the prevention of injury and occupational disease to persons and damage to property through accidents and fire in hospitals and institutions. Stresses employee and patient health and safety. 116 pages, 6" x 9".



#### SAFETY MANUAL FOR THE GRAPHIC ARTS INDUSTRY

The first complete, authoritative manual for the Graphic Arts Industry—representing the best safety know-how available. Shows how to stop accidents, gives the how to, whys, and results of successful safety programs in the printing industry. Explains what shopping accidents will mean in terms of production, efficiency, worker morale and reduced costs . . . "must" reading for plant owners, managers, foremen. 96 pages, 6" x 9".



#### FLEET SAFETY MANUAL

Shows how to organize and conduct an effective safety program. It consists of eight comprehensive parts and supplementary material in a rich maroon loose-leaf binder. The sections cover: The Fleet Program; Selection of Drivers; Driver Training; Accident Reports and Records; National Fleet Safety Contest Rules; Safe Driver Award Rules; Garage and Repair Shop Safety; The Accident Review Committee; a broad selection of informative pamphlets.



#### A SAFETY MANUAL FOR MARINE OIL-FIRED WATERTUBE BOILERS

Completely covers general operation and maintenance and repair, from placing the boiler in service to laying up boilers. Particular emphasis is placed on all the principles of safety involved in operation, maintenance and repair. Includes discussion of specific safe practices and of fire prevention. Illustrated. 72 pages, 6" x 9".



#### SAFETY IN QUARRY OPERATIONS

This authoritative manual provides all the basic information for setting up and operating an effective safety program. Included are sections on safety organization and accident investigations, technical discussions on drilling, safe storage and use of explosives, quarry railways, truck transportation in quarries, and use of mechanical equipment. 48 pages, 6" x 9".



#### PUBLIC SAFETY MAGAZINE

... the best single source of the latest safety information in the traffic and transportation fields. More than 40 pages featuring stimulating articles by fleet and traffic safety experts, current accident statistics, news of accident prevention activities, and reviews of new safety publications. Published monthly. 8" x 11", 40 pages.

#### SAFETY EDUCATION MAGAZINE

The only national magazine for teachers which is devoted exclusively to safety. Each issue contains informative articles by leading educators; facts on a variety of subjects; monthly lesson units for all grade levels; and a poster insert printed on two sides for use in elementary or secondary classrooms. Issued monthly, September through May. 7" x 10", 40 pages.

#### HOME SAFETY REVIEW

A 10-issue magazine devoted exclusively to home safety, containing articles of general interest to families on home accidents and their prevention. Each issue includes news on local home safety activities, advice on educational programs, factual data on home accidents and informative articles on some phase of home accident prevention. 8 1/2" x 11", 32 pages.



#### FARM SAFETY REVIEW

A national magazine especially for agricultural leaders, containing ideas, material suggestions, and program helps on the subject of farm safety. Provides authoritative and specific information on accident causes in agricultural occupations. Published monthly. 5 1/2" x 8 1/2", 16 pages.

#### OFF-THE-JOB SAFETY KIT

A packet prepared by the Off-The-Job Safety Committee to help safety men put across a program to both management and employees. Contains about 85 items—booklets, instruction cards, planning material, sources of help, posters, and other materials. Write for information.

#### OPERATION SAFETY KIT

A package of materials providing a basic program of traffic safety for civic organizations, law enforcement groups, local government agencies, and industry, within a community. Contains Planning Guide, timely news releases, radio scripts, editorials, speaker's aids, etc. Issued monthly. Beginning in June, will be issued quarterly for seasonal use.

# ADMINISTRATIVE UNITS



for  
SAFETY  
ENGINEERS



for  
TRAINING  
SUPERVISORS



for  
PLANT  
MANAGERS



for  
MAINTENANCE  
FOREMEN



for  
FLEET  
SUPERVISORS

## *what they are*

An Administrative Unit is a cream-of-the-crop combination of monthly, annual, and special Council materials selected to provide a balanced information service for the key men in your safety program. Each Unit includes copies of know-how publications, such as a safety manual, and subscriptions to news-type publications, such as the NATIONAL SAFETY NEWS and News Letter. When ordered as a Unit, these publications cost at least 10% less than they would if purchased individually.

## *how they work*

The Unit provides the subscriber with a background of safety information, and keeps him up to date with safety engineering and program developments. The Unit permits participation in Council Sectional activities. The Unit keeps subscribers informed about new Council services and materials. Unit holders receive all Council Service Guides, announcements, and literature describing new safety aids, as well as samples of many of the new publications.

## *who should have them*

"A" Units are for full-time safety supervisors. "B" Units are for people with substantial safety responsibility: personnel directors, industrial training supervisors, plant engineers, insurance engineers and inspectors, part-time safety supervisors of installations with 100 to 400 employees. "C" Units are for people with incidental safety responsibility: medical directors, chiefs of plant protection, maintenance foremen, part-time safety supervisors of installations with less than 100 employees. In addition to the eight Units described below, there are many other Units for people interested in various fields of safety. Information on these Units will be sent on request.

## *how to order*

When ordering Units, be sure to specify: name and title of the individual, company name, street address, city, zone, and state, type of Unit desired, choice of sections. You'll find a list of Council sections under "News Letters" on page 8.

TYPE OF ADMINISTRATIVE UNITS	General	Industrial				Transportation			Con- struction
	AA-1	A-1	B-1	C-1	A-2	B-2	C-2	B-11	
Services Included:									
1. National Safety News, monthly.....	1	1	1	1	1	—	—	1	
2. Public Safety Magazine, monthly.....	1	—	—	—	1	1	1	—	
3. Sectional Enrollment and monthly News Letter.....	3	3	2	1	3	2	1	1	
4. Industrial Supervisor, monthly.....	1	1	—	—	—	—	—	1	
5. Accident Rates pamphlet, annually.....	2	1	1	—	1	1	—	1	
6. Manuals, as issued									
a. Accident Prevention Manual.....	1	1	1	—	—	—	—	—	
b. Handbook of Accident Prevention.....	—	—	—	1	—	—	—	—	
c. Fleet Manual, large.....	1	—	—	—	1	1	—	—	
d. Fleet Manual, small.....	—	—	—	—	—	—	1	—	
e. Construction (A.G.C.) Manual.....	—	—	—	—	—	—	—	1	
7. Congress Transactions, annually									
General.....	1	1	1	1	1	1	1	1	
Subject Sessions.....	1	1	1	1	1	—	—	1	
Section Meetings.....	3	3	2	1	3	2	1	1	
8. National Safety Calendar, annually.....	1	1	1	1	1	1	1	1	
9. Accident Facts, annually.....	1	1	1	—	1	1	—	1	
10. Technical releases for your industry, as issued.....	1	1	1	1	1	1	1	1	

## Supervisor training



the magazine that teaches safety in terms of better production . . . read and highly regarded by more than 140,000 supervisory people every month

## Industrial Supervisor

INDUSTRIAL SUPERVISOR takes over where other training aids leave off. It keeps your foremen and supervisors sold on safety. It impresses them with the importance of the part they play in preventing accidents. It never lets them forget that more efficient production—with safety—is a goal that deserves the best they can give.

Any supervisor worthy of his title is glad to get this magazine because it helps him do a better job in each of his many roles—teacher, detective, inspector, leader, counselor and friend. He has a daily need for the how-to-do-it information, the practical psychology and human relations features.

INDUSTRIAL SUPERVISOR is saved—in whole or in part—for reference and review—by nearly all subscribers. For best results, give each supervisor and foreman his own copy each month.





a basic text for training the foreman  
in occupational safety

the new

## SUPERVISOR'S SAFETY MANUAL

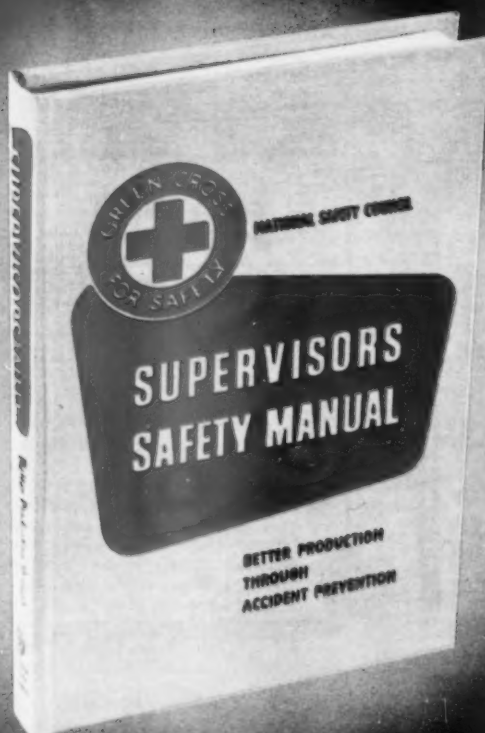
More than 350 pages directed squarely at the problems of safety supervision—an easily-read presentation of data and suggestions pitched to the foreman's viewpoint—the most complete and authoritative book of its kind obtainable. Written by staff engineers of the Council's Industrial Department, and reviewed by the Industrial Safety Training Committee of the Industrial Conference, the Supervisor's Safety Manual provides a modern, detailed text for either self training or group instruction.

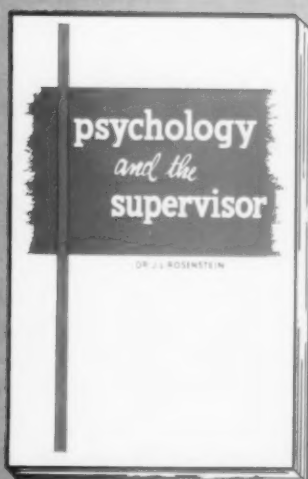
And it is an unbeatable reference work as well—an inexhaustible source of solutions to scores of the safety problems that the foreman encounters during each work-day.

For training purposes, or as a safety reference book, the new Supervisor's Safety Manual belongs in the hands of every one of your foremen and supervisors.

### LIST OF CHAPTERS

1. Safety and the Foreman
2. Know Your Accident Problems
3. The Human Element
4. Maintaining Interest in Safety
5. Instructing for Safety
6. Health and First Aid
7. Personal Protective Equipment
8. Departmental Housekeeping
9. Materials Handling and Storage
10. Guarding Machines and Equipment
11. Hand and Portable Power Tools
12. Fire Prevention and Control





#### PSYCHOLOGY AND THE SUPERVISOR

The series of popular articles by Dr. J. L. Rosenstein that appeared in the *INDUSTRIAL SUPERVISOR*, reprinted in booklet form. The author, an expert on human relations, discusses the basic motivations of human nature—fear, worry, personality problems, etc. Written in an entertaining style, with illustrations. 32 pages, 5½" x 8½".



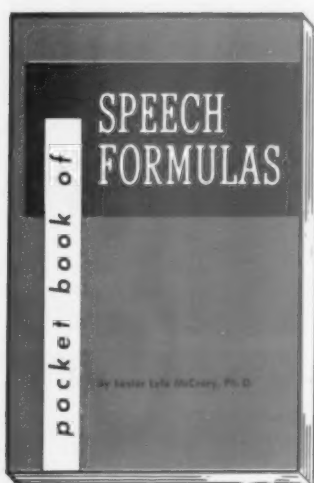
#### HANDBOOK OF ACCIDENT PREVENTION

Where safety is a part-time job, as with foremen, the Handbook is the safety guide you need. It covers the essentials of a sound safety program such as inspections, records, material handling, fire prevention and other important subjects. 96 pages, 5⅞" x 8¾".



#### 1,000 SAFETY BELL RINGERS

The revised edition containing 1,000 safety slogans. Catchy phrases to use in safety talks, slogans to pep up a safety program, the right saying to help put across an idea so that it makes an impression. Slogans are divided by subjects such as fire prevention, general slogans, etc. 32 pages, 6" x 9".



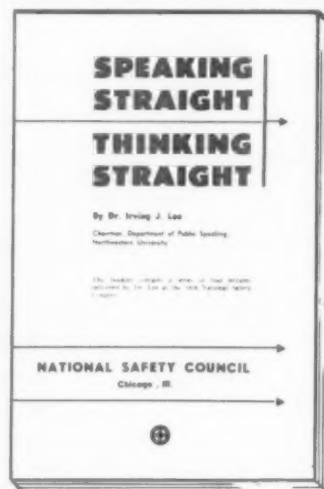
#### "POCKET BOOK OF SPEECH FORMULAS

Presents step-by-step details on the organization, preparation, and delivery of every kind of talk, from a full-blown safety speech to an interview with a job applicant. Written by Dr. Lester Lyle McCrery, Ph.D., professor of Speech and English at the California Institute of Technology. 36 pages, 5½" x 8½".



#### HOW TO MAKE THE SAFETY SPEECH

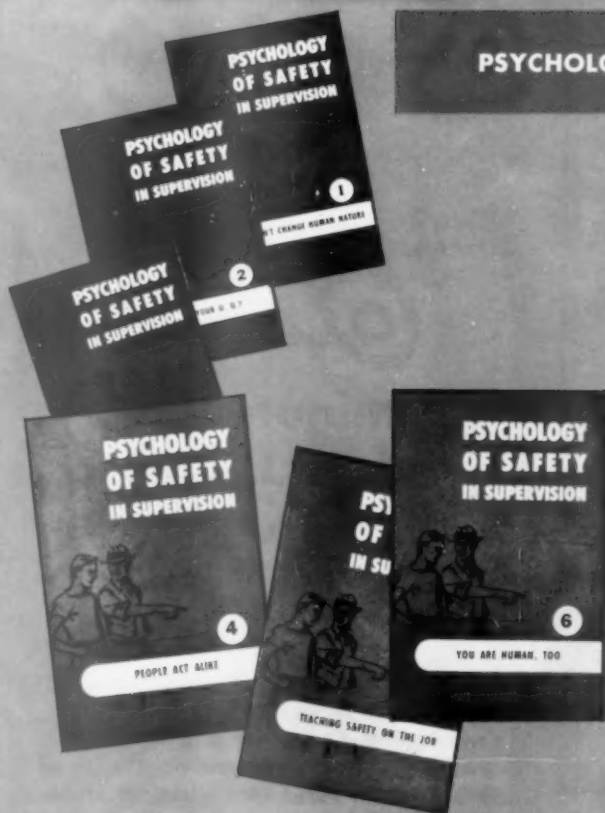
A handy booklet presenting the fundamentals of speech making. Shows safety men, supervisors and foremen how to put safety talks across to large and small groups. Included are chapters on how to prepare the speech, how to give the speech, contents of a good speech, and elimination of bad speech habits. 64 pages, 5½" x 8½".



#### SPEAKING STRAIGHT—THINKING STRAIGHT

Four lectures on public speaking given at the 1946 Safety Congress by the late Dr. Irving J. Lee, Professor, School of Speech, Northwestern University. Discusses preparing the speech, stagefright, fluency, use of gestures, vocabulary, etc. Warns against confusing facts and assumptions. 24 pages, 5½" x 8½".

## PSYCHOLOGY OF SAFETY IN SUPERVISION



A tremendously popular set of booklets written by Dr. J. L. Rosenstein, noted industrial psychologist, author and lecturer. All six booklets in this series do much more than encourage safe practices. They teach supervisors to do a better job of controlling their people by developing a better understanding of worker attitudes and actions—how to deal with the fundamental human relation problems that supervisors run up against day after day. 6" x 9", 12 pages.

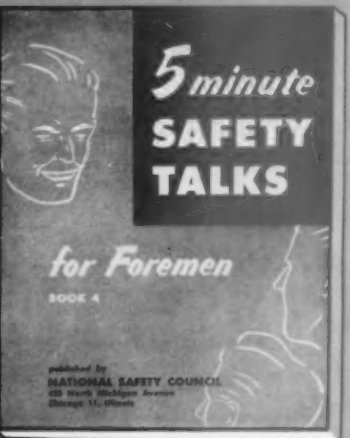
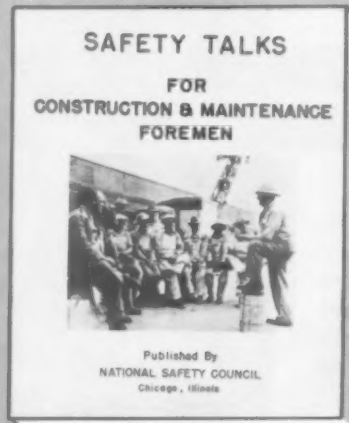
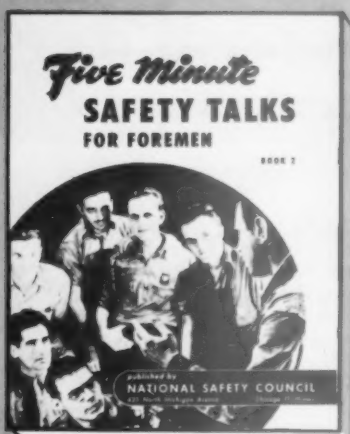
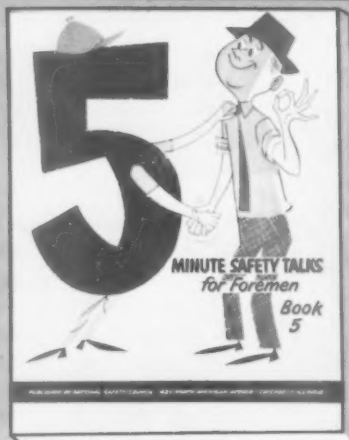
1. **You Can't Change Human Nature**  
(explains common peculiarities of human nature)
2. **What Is Your UQ?**  
(the importance of a supervisor having a high "understanding quotient")
3. **Teaching Safety On The Job**  
(how lack of sufficient knowledge can cause workers to have accidents)
4. **People Act Alike**  
(explains in what way normal people are all alike and how they differ from each other)
5. **Safety Takes Teamwork**  
(suggests different techniques for keeping employees safety minded)
6. **You Are Human Too**  
(shows supervisors how to evaluate themselves)

## SAFETY IN FOREMANSHIP

A set of 12 pamphlets, each devoted to a major part of the accident problem, and treated wholly from the foreman's viewpoint. These pamphlets provide a ready-made course for teaching the principles of accident prevention to supervisors. An instructor's outline is provided with each order. 6" x 9" with from four to eight pages. Booklet No. 1 is an introduction to the booklets to follow.

2. **The Foreman's Opportunity—Production With Safety**  
(foremen's responsibility for the safety of workers)
3. **Have You Thought About This?**  
(the human suffering caused by accidents)
4. **Do You Know How Much An Accident Costs?**
5. **Safeguards—Why and How**
6. **Look Out For That First Step!**  
(safety instruction for the new worker)
7. **Are You Following Through?**
8. **What Accident Statistics Tell the Foreman**  
(enforcement of safety instructions)
9. **Why And How To Be A Good Housekeeper**
10. **Detecting And Correcting Unsafe Conditions**
11. **After An Accident—What?**
12. **What About Fire In Your Department?**





Keep your foremen  
thinking — talking — teaching  
safety — 52 weeks a year

## 5 minute safety talks for foremen

Whether it's an informal safety pep talk, a scheduled training session, or a job of instruction for a new worker, 5 Minute Safety Talks equip your foremen and supervisors to do a better job. Each of these big, ready-to-use collections of informal safety speeches do away with the need for research and preparation—help the foremen to hold meetings that will keep their men interested and enthused.

Books 1 through 5, each containing 52 different talks, have come to be regarded as essential aids to any training program. The subjects they offer run the gamut through general industrial safety practices, specific accident prevention problems, off-the-job safety, and worker attitudes. Book 6, issued early in 1956, was written by Roland Blake, who also authored 'Industrial Safety' and who is well known as an outstanding authority on industrial safety.

'Safety Talks for Construction and Maintenance Foremen' covers 58 subjects, and was written by members of the Construction Section Executive Committee. '30 Short Safety Talks for Tailboard Meetings' was edited by the Public Utilities Section Executive Committee.



# "Supervising for Safety"



3 training films  
featuring

*Gustave G. O'Grady*

*the foreman whose fumbling, fuming,  
and invariably funny mis-adventures  
offer your foremen some sound lessons  
in handling their own workers.*

## CALL 'EM ON THE CARPET

Confronted with the problem of trying to correct some of his men, O'Grady realizes that each worker is different—each must be treated as an individual. He learns too, to "cool off" before he "sounds off" to correct a man in private, explain the reasons for his instructions, work in a compliment when it's deserved.



## IT'S AN ORDER

O'Grady is having accident trouble when he receives a note from management on "how to give an order." He's indignant at this suggestion but after a series of humorous misunderstandings, O'Grady decides that there's more to giving orders than he realizes. He re-reads the instructions: say what you mean; make written orders clear; not too many orders at once; show by doing; explain why.



## FRAGILE—HANDLE FEELING WITH CARE

After studying the discontented attitudes of some of his employees, O'Grady reaches the decision that as supervisor, a really important part of his job is to consider the feelings of his employees—that workers want to know the "reasons why" for rules or changes. The supervisor must give them recognition for their ideas, take their requests into consideration, and give them an occasional pat on the back.



Since this popular film series was released several years ago, it has been put to use by hundreds of companies in their foreman training programs. The ideas presented in each film are those of Dr. Arthur Secord, a noted lecturer and teacher of human relations. O'Grady presents these ideas in a series of episodes that get your foremen learning while they laugh—learning that happy workers are less likely to have accidents, and that worker happiness depends a lot upon intelligent supervision. Running time is 12 minutes for each film. The series is available in either 35mm sound slidefilms or 16mm sound motion pictures. Black and white.

## 4 other films for your foreman training program



### ALL OUT FOR SAFETY

Story of what happens to supervisor O'Grady when he attends a safety conference. He learns the value of meeting with others in his field, seeing new devices and ideas which will profit him, finds out that other people have similar problems—and how they solve them. Black and white. 15 minutes. 16mm sound motion picture.



### A GRAY DAY FOR O'GRADY

O'Grady learns that accidents are very much his business. The boss shows him how a couple of recent accidents tied up his time, brought production to a near standstill and spiraled his department's costs. 15 minutes. 35mm sound slidefilm, or 16mm sound motion picture. Black and white.



### PICK YOUR SAFETY TARGET

Shows foremen how to analyze and classify accidents, interpret facts and translate them into action. Combined cartoons and live shots. 13 minutes. 35mm sound slidefilm—color, 16mm sound motion picture—color, or black and white.



### INVISIBLE RED INK

Originally planned as an appeal to business management to recognize the importance of planned safety activities, this film is equally good as an employee indoctrination or foreman training film. It will show your workers the "why" behind your safety program—what it means to them and to your company; that their paychecks... possibly their lives are tied up with its success and their support. 20 minutes. 35mm sound slidefilm. Black and white.



## ... "Human Factors in Safety"

Six 35mm sound slidefilms that show your foremen how to **UNDERSTAND** and **USE** basic human traits in building a better safety program.

Here's how to make your supervisors a dynamic part of your program. Give them this complete film training course that shows how understanding basic human behavior and putting it to use can make Better Safety Supervisors . . . Better Production Men . . . Better Builders of Employee Morale. Human Factors In Safety is a set of six 35mm sound slidefilms with Leader's Manual. Each film covers one important part of the complex art of handling people. They include tips on breaking in new workers,

keeping experienced workers on their toes, gaining and keeping employee respect, cooperation and loyal support.

The course is entertaining, instructive, effective—a film series that will make your foremen sit up and take notice, because they all want to learn more about the fascinating subject of handling people.

Complete set includes an attractive tan leatherette carrying case. Running time of each film is 15 minutes, except *Safety Case Histories* which is 30 minutes.

### THE SECRET OF SUPERVISION

—sets the stage for the other five films. In story form, it illustrates why workers respond enthusiastically to one supervisor, while they resent and rebel against another. It explains that the films to follow show how to be boss and still be liked—the art of handling people.

### TEACHING SAFETY ON THE JOB

—shows supervisors how to prepare and give job safety instructions. The four steps of good job training illustrated are: **PREPARE**—tell the worker what he has to learn and why; **PRESENT**—demonstrate how the job is done; **APPLY**—let the worker try it; **TEST**—spot check until the worker masters the job.

### PEOPLE ARE ALL ALIKE

—explains that all normal people want the same things: a feeling of belonging to the crowd, recognition for good work, knowledge of what goes on, the ability to talk things over with the boss, and pride in their jobs. With the help of Ditzel's cartoons, the film shows how supervisors can satisfy these basic wants—get their men to work with them.



### EVERYBODY'S DIFFERENT

—points out that while people have many things in common they also differ from one another in personality, ability and background. The film—a Bruce Shanks cartoon special—shows supervisors what allowances to make for these differences . . . how to handle the rough guy, the show-off, the loud-mouth, the daydreamer, and the practical joker.

### TEAMWORK FOR SAFETY

—suggests way for supervisors to make safety interesting and important to their workers. Holding stimulating meetings, encouraging suggestions from workers, using safety literature to good advantage, getting the workers to inspect for hazards . . . are some of the techniques discussed.

### SAFETY CASE HISTORIES

—the first safety sound slide of its kind! It presents case histories of accidents that actually happened. After each, the film is stopped so the audience can discuss what caused the accident, and how it could have been prevented. This unusual way of giving the audience a chance to show what they've learned is a wonderful wind-up for a great training course.

# Safety Management for Foremen

**Ten 35mm sound slidefilms with Leader's Manual . . . designed to make your foremen the sparkplugs of your safety program**

Hundreds of executives have written in to say that this series has done more than any other training aid to develop the safety knowledge and training ability of their foremen. It shows foremen what and how to teach workers . . . it shows them the importance of the part they play in the safety program . . . and how a successful program can bring the benefits of increased production. The set is packed in a sturdy leatherette carrying case. Running time of each film is 20 minutes.



## **FOLLOW THE LEADER**

Gives a step-by-step description of how a safety program is organized—assigning safety responsibility, analyzing accident records, holding safety meetings, inspecting, guarding machinery, training employees.



## **CAUSE AND CURE**

Shows how to analyze an accident to determine its real causes. The film covers ten unsafe acts and eight unsafe conditions every foreman should be on the lookout for.



## **GUARD DUTY**

Pictures effective guards for common power machines, and points out that it's up to foremen to see that these guards are kept in place.



## **SAFETY IS IN ORDER**

Good housekeeping from the foreman's angle. Some points stressed are: a place for everything and insist that everything is in its place; a minimum of raw material on the floor; aisles clear; supervise piling of material; every man keeps his work area clean.



## **RIGHT DRESS**

It's up to your foremen to see that each of their workers has the right dress for his job. Every foreman should be familiar with the common types of protective equipment pictured in this film.



## **DOCTOR'S ORDERS**

Your workers' attitude toward first aid depends on your foremen . . . sells them on the importance and value of prompt first aid. It also discusses the value of regular physical examinations, and accident reports for every first aid case.



## **BRAIN BEATS BRAWN**

Improper handling of material and how to teach your foremen to prevent these injuries—and teach them the best material handling practices—gives detailed instructions on lifting and covers other material handling hazards.



## **STOP, LOOK AND LISTEN**

This film pictures a safety inspection committee—shows exactly what to look for when making a plant inspection. "Stop and think about safety long enough to look for unsafe conditions, and listen to safety suggestions" is their slogan.



## **PRINCIPLES AND INTEREST**

To sell safety to workers, your foremen must create an active interest in the subject. Discusses ways in which this can be accomplished: posters, contests, inspections, safety meetings, awards, payroll enclosures, publicity.



## **PRODUCTION WITH SAFETY**

"It takes less time to prevent accidents than to have them" is the theme of this film. The accident case histories presented in the film prove the point—give specific examples of how safety increases production and cuts costs.

## Supervisor training



## ... "speaking of safety"

**Shows your supervisors how to put across ideas, how to speak with confidence, of safety.**

Supervisors and foremen are the vital link in communicating management ideas to workers. This tested set of training films makes it easier for your men on the line to speak up for safety . . . helps them talk persuasively, with more confidence and conviction. You don't have to be a speech training expert to put on this course. The easy-to-follow Leader's Manual provides detailed plans for a series of six meetings and

practice sessions. Anyone who can thread a sound slide projector and lead an informal discussion meeting can do an effective job.

The series consists of six 35mm sound slidefilms and Leader's Manual packed in an attractive leatherette carrying case with two-sided records for use with either manual or automatic projectors. Running time is 13 minutes for each film.

### THE POWER OF SPEECH

An introduction to the films. It lists some of the occasions when foremen and supervisors may be called upon to give a speech, explains the difference between a formal speech and a working speech, and discusses their purposes.



### BUTTERFLIES IN YOUR STOMACH

Describes "that strange feeling that hits you the moment you stand up to talk," explains the physiological reactions that cause stage fright, and shows how to overcome it.



### THE KEY TO GOOD SPEAKING

Outlines four methods of preparing a speech, discusses the advantages and disadvantages of each, then explains which method is recommended and why. The film gives a step-by-step description of how to prepare a typical safety speech.



### ON YOUR FEET

Explains what to do physically when you get up to talk; how to stand; the purpose of moving around and how to do it effectively; what to do with your hands; where to look.

### HOW YOU'RE TALKING

Discusses the actual speech making: how loudly to talk; vocabulary, and how to phrase your ideas; your attitude—why it is important not to "talk down" to your audience . . . how friendliness, sincerity, and enthusiasm can make a successful speech.

### RING THE BELL

Shows how to hold the attention of your audience from beginning to end. It explains how to "break through the ice"; the value of demonstrations, scale models or mock-ups, films and still pictures, graphs, charts, and diagrams.



## National Safety Council Services and Activities



### CONSULTATION SERVICE

The Council's staff of engineers, safety technicians and industrial hygienists are at your command by mail, wire or phone. They are equipped to give you unlimited assistance in planning and running a successful program of accident prevention.

### LIBRARY SERVICE

The world's biggest collection of safety information—thousands of publications, articles, photographs, illustrations on every conceivable safety subject—is yours to use. Material on any subject will be mailed to you on request.

### AWARD SERVICE

The Council evaluates each organization's occupational accident prevention record on a sound statistical basis. The Award of Honor, Award of Merit, Certificate of Commendation, and President's Letter are given in recognition of various degrees of progress.

### NATIONAL SAFETY CONGRESS

The biggest annual event in safety—a week of talks and discussions by the country's leading safety authorities—exhibits of safety equipment. Chicago plays host to the 12,000 delegates in mid-October each year. You can send any number of representatives to learn about the latest safety developments and to exchange ideas with safety men in your industry.

### SPEAKERS BUREAU

A file of both volunteer and professional speakers is maintained to place you in contact with persons qualified to give safety talks to any type of audience.

### PUBLICATIONS SERVICE

More than 4,000 items produced by the Council for promoting accident prevention are available to members and Federal installations at nominal rates—in most cases at 40% to 50% of the established non-member rates.

### SECTIONAL ACTIVITIES

Part of the income from Council dues and publications covers the costs involved in developing safety codes and safe operating procedures for your industry and other technical studies.

Intra-industry contests are also supported by dues. These sections sponsor annual contests: Aeronautical Industries, Chemical, Commercial Vehicle, Fertilizer, Food, Glass, Marine, Meat Packing, Metals, Pulp & Paper, Petroleum, Printing & Publishing, Public Utilities, Rubber, Tanning & Leather, Textile, Transit, and Wood Products. Any Council member or Federal installation qualified under rules established by the sponsoring section may compete by submitting a simple monthly report. Entrants compete only with organizations of their own size which have similar operations. Each month you receive a report of your standing. If you win, there's a handsome trophy that's yours to keep. Contest rules and report forms are sent on request.

### STATISTICAL SERVICE

The information maintained on accident frequency and severity in 200 industries permits you to check your standing and the progress of your program against the records of other organizations doing similar work. Charts and tables are prepared on unsafe acts, agencies of injury and unsafe conditions that lead to accidents.

### PUBLIC INFORMATION SERVICE

Due to the ever expanding publicity activities and services directed to newspapers, magazines, radio and television stations throughout the country, the American worker and his family receive an average of at least two safety messages a day.

### PERSONNEL BUREAU

The Council maintains a confidential file of safety men who are interested in changing jobs. If you need a safety director or engineer, the Council can help you find the right man for the job.

## Use these FREE safety publicity features in your company newspaper or magazine

These safety features have been prepared by the National Safety Council, as a public service to newspapers and magazines. They are the work of nationally known cartoonists and publicity men who are expert at selling safety

to the public. Mats or proof sheets of any of these features are FREE, and will be sent to you upon request. Your safety publicity program takes on added life and interest when you use them in your company publications.

### the LIGHTER SIDE



### general features

#### EMPLOYEE PUBLICATIONS NEWSLETTER

A monthly mimeographed newsletter for industrial editors. Suggests ways to make more effective use of employee publications in teaching and promoting safety. Put your editor on the regular mailing list.

#### SAFE BETS

Ten one-column humorous cartoons on traffic, home and recreational accident prevention, captioned in verse. Sugar coated safety capsules that will be swallowed with a smile.

### industrial features.

#### THE LIGHTER SIDE

A monthly, one-column cartoon on the subject of industrial safety.

#### WHAT'S WRONG WITH THIS PICTURE?

Six 3 column cartoons, each picturing a multitude of unsafe acts in machine shop, shipping room, office, plant yard, etc. Workers are asked to identify each hazard. a separate contest can be built around each cartoon.

#### HAP HAZARD

Ten one-column cartoons on the most universal and persistent problems in industrial safety: material handling, falls, horseplay, attitudes, etc. Cartoons are by Walt Ditzgen.

#### WORKING DAZE

Ten one-column cartoons which combine entertainment with painless preaching on many accident hazards common to all industry.

### traffic features

#### BUMPER CROP

Ten one-column cartoons by Sid Hix, stressing the need for greater care on the part of both drivers and pedestrians.

#### HERE'S THE DOPE

Ten one-column cartoons that point out traffic hazards.

#### ICE JAMS

A group of one column cartoons that hit at principal winter driving hazards.

#### UNCLE MELTY

Six one-column cartoons featuring a genial snowman who discusses winter driving precautions.

#### HIGHWAY ZOO

A collection of grin producing (and thought producing) one-column cartoons showing how certain types of drivers can be likened to animals—such as the Jackrabbit, who zigzags through traffic like a frightened bunny, and the Goose, who is, of course, a honker.

### off-the-job safety features

#### HEARTH ACHES

Eight one-column humorous cartoons that call attention to the hazards in the home.

Mats, for letterpress publications, and proofs for reproduction by other processes are available, free of cost, on all these safety publicity features. Address your requests to Public Information Department, National Safety Council.

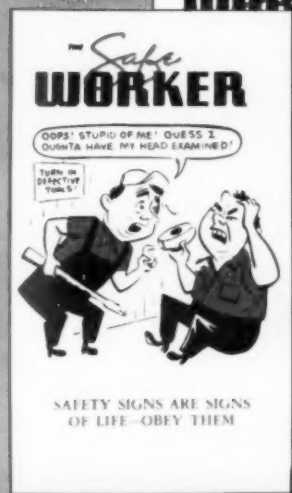
#### BUMPER CROP



#### HAP HAZARD



**correct the unsafe attitudes  
behind the unsafe acts . . .**



# THE *Safe* WORKER

This pocket sized psychologist can build a sound Safety attitude in even the most unresponsive worker — the one who's been told and told, but never sold. Using a mixture of cartoons, broad humor, and homespun philosophy it offers its accident prevention lessons in a pleasant, interesting way — sugar coated doses of safety sense that gently point out

the benefits of doing each job the safe way. With your company name imprinted on the cover, **SAFE WORKER** becomes your own, company safety magazine . . . and you'll probably see a large percentage of your employees taking it home to share with their families. It's published monthly, has 16 pages, and is 3  $\frac{3}{8}$ " x 5  $\frac{7}{8}$ " in size.



## THE SAFE DRIVER

3 editions: truck  
bus  
passenger car

16 pages of safety squibs, sprinkled with humor and lots of cartoons, induce your drivers to form good driving habits, to accept responsibility for equipment, and to realize the "for me" benefits of safe driving. A sound safety builder every month . . . and in three versions, so that safety messages and cartoons are slanted specifically at either truck, bus, or passenger car drivers. You can make SAFE DRIVER your own fleet safety magazine by ordering your name imprinted on the cover. 3 3/8" x 5 7/8".



## THE SAFE BUILDER

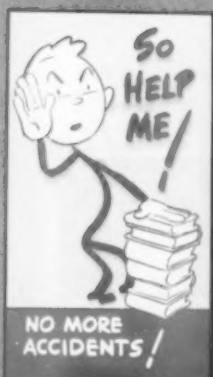
This is the construction industry's own employee magazine, issued monthly. It is aimed at the specific hazards, the unsafe practices and attitudes peculiar to the construction industry and its workers. 8 pages, 3 3/8" x 5 7/8".



## THE SAFE RAILROADER

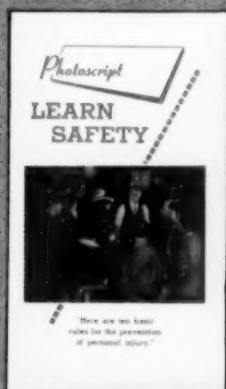
The monthly magazine for railroad workers. Its cartoons, commonsense safety rules, and humorous articles will win and maintain employee interest. It is suitable for all railroad men—engineers, firemen, trainmen, shop and maintenance of way personnel. 8 pages, 3 3/8" x 5 7/8".





#### SO HELP ME!

A sprightly safety rule booklet jam-packed with no-accident tips, eye catching safety cartoons and lifting safety jingles. An inspirational memory refresher highlighting the tried and true safety precautions. 20 pages, 3" x 5 1/4".



#### LEARN SAFETY

Presents the ten basic rules for the prevention of personal injury. Discusses unnecessary chances, horseplay, handling material safety, first aid, safe clothing, good housekeeping, etc. Photoscript. 16 pages, 3 1/2" x 6".



#### STEPS TO SAFETY

A personal checklist of sound safety rules that apply to any worker on any job—and off-the-job, as well. The straight-from-the-shoulder approach portrays the safety program as the personal concern of each employee. Cartoons on all its 16 pages. 3" x 5 1/2".



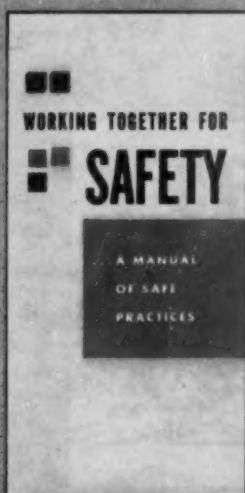
#### SHOP SAFETY

An illustrated safety manual for workers. Deals with protective clothing, hand and power tools, materials handling, machinery, plus many other safety measures. 32 pages, 5 1/4" x 8 1/4".



#### A WISE BIRD FOLLOWS THE RULES

Answers a basic need in safety programs — showing workers why rules exist, who makes them, and how they are formulated. Clever cartoons and copy give workers a better slant on the safety program. 16 pages, 3" x 5 1/2".



#### WORKING TOGETHER FOR SAFETY

Covers general safety regulations, special operations, fire prevention, lifting and carrying, piling, health and many other topics. Ideal for orienting new employees, and as a safety refresher for older employees. 32 pages, 4" x 7".



#### "HEADS YOU WIN"

A colorful booklet that makes an appeal to the employee's own self interest. Amusing cartoons point out the benefits of discarding unsafe attitudes and notions and using good common sense to stay safe on the job. 16 pages, 3 3/8" x 8 3/4".



#### "SAFETY IS NO ACCIDENT"

A picture story of 10 basic rules for general in-the-plant accident prevention. Full color illustrations, with brief texts, covers need for reporting unsafe conditions, compliance with safety rules and signs, housekeeping, etc. 16 pages, 3 1/2" x 7".



#### ELECTRICITY

Accident Preventer 502 sums up the important points to remember about electrical tools, cords, and outlets. Shows the safe way of removing fuse, unscrewing broken bulb, plugging in power cord. 4 pages, 3" x 5".



#### FOUR PRINCIPLES OF HAND TOOL SAFETY

Accident Preventer 501, explains the importance of selecting the right tool for the right job, condition and maintenance of tools and the storing of them in a safe place, ready for use. 4 pages, 3" x 5".



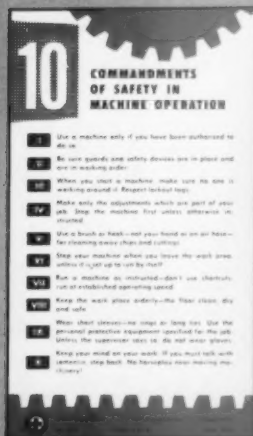
#### MACHINISTS' HAND TOOLS

Presents four easily-followed rules for eliminating hand tool accidents: 1. The right tool; 2. In good condition; 3. Used correctly; 4. Kept in a safe place. Photoscript. 16 pages, 3 1/2" x 6".



#### MAINTENANCE TOOLS

Drives home the A B C's of handling tools. It shows how to prevent accidents by using tools correctly, keeping them in good condition, and in the proper place. Photoscript. 16 pages, 3 1/2" x 6".



#### 10 COMMANDMENTS OF SAFETY IN MACHINE OPERATION

An attractively designed list of the ten fundamental safety rules for machine operators. Printed in 2 colors on light card stock. Handy 4" x 7" size. With each 100 ordered, one 9 1/4" x 10 3/4" reproduction is included free of charge.



#### FALLS

Falls rank second only to automobile accidents as a cause of accidental death. This Photoscript pictures ten safety rules for avoiding falls; eliminating fall hazards. 16 pages, 3 1/2" x 6".



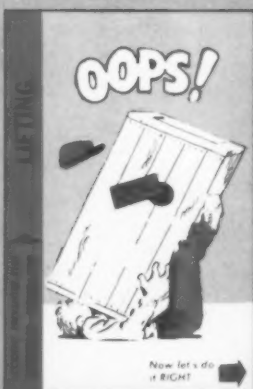
#### THE FALL GUY

Stresses the hazards that cause falls in industry: poor house-keeping, failure to use handrails, unsafe ladder practices, undue haste, hitching rides, lack of attention, makeshifts and faulty equipment. 16 pages, 3" x 5 1/2".



#### HOW TO PREVENT FALLS

Filled with many safety do's-and-don'ts that prevent falls due to jumping, hitching rides, hurrying on stairs, incorrect use of ladders, running. Cartoon illustrations with serious text. 8 pages, 3 7/8" x 8".



#### LIFTING

Accident Preventer 101, shows how to lift materials safely and pinpoints specific lifting precautions: see around load, watch for pinch points, rest load, avoid twisting, etc. Fully illustrated. 4 pages, 3" x 5".



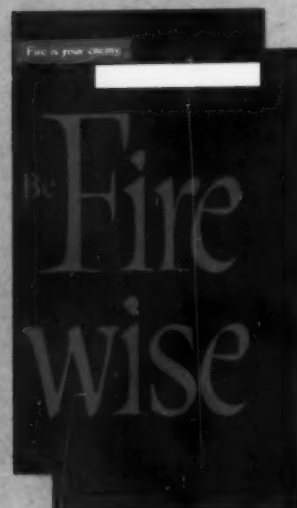
#### HANDLE WITH CARE

Presents practical tips on lifting, carrying and piling. Stresses importance of wearing gloves and protective foot gear when lifting. Photoscript. 16 pages, 3 1/2" x 6".



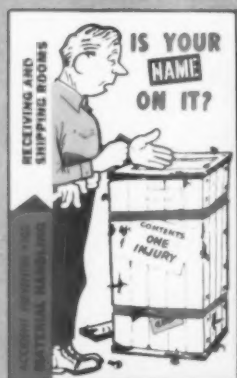
#### HEAVE HO!

One of the most complete and effective lifting stories you can give your workers. It takes them through material handling from start to finish, from sizing up the job to actual lifting techniques. Cartoon illustrated, 12 pages, 3" x 5 1/2".



#### BE FIRE WISE

Dramatic pictures and copy describe the causes and cures of fire. Hits at poor house-keeping, improper handling of solvents, faulty electricity, man-made fires—shows workers how to be fire-safe. 16 pages, 4" x 7".



#### RECEIVING AND SHIPPING ROOMS

Accident Preventer 102 deals with a variety of safe practices in material handling and storage. Practical tips on opening metal strapped boxes, on preparing outgoing shipments, on storing, stacking, and lifting. 4 pages, 3" x 5".



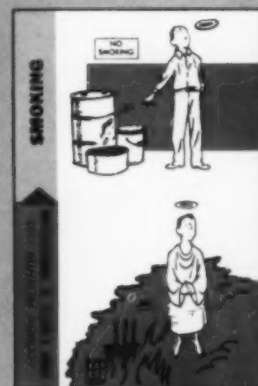
#### FREIGHT HANDLING

Covers such standard procedures as how to lift; how to carry; how to pile materials; how to operate hand trucks; unloading hazards, and dock plates. Photoscript. 16 pages, 3 1/2" x 6".



#### REALLY STACKED

Gives the basic rules for the safe handling of materials. Clearly shows with simple diagrams and easy-to-understand directions how to pile and store materials. Includes directions on how to store odd shaped pieces, how to cross-tie. 16 pages, 3" x 5 1/2".



#### SMOKING

Accident Preventer 202 shows the careless smoking habits that can cause plant fires. Presents some 'don'ts' of disposing of cigarette butts. 4 pages, 3" x 5".



### THERE'LL BE A HOT TIME IN THE OL' PLANT

Convincing booklet showing workers the importance of observing basic fire rules. Humorous cartoons point out that "act first—think last" workers cause fires in plants. Includes tips on what to do in case of fire, and "tell-at-a-glance" fire extinguisher chart. Full color, 16 pages, 4" x 7".



### DON'T MAKE AN ASH OF YOURSELF

Shows its readers how such 'unconscious arson' as poor housekeeping, clumsy handling of flammables, and general indifference to fire safety, can start the spark that could burn them out of job, paycheck . . . and life. Handy fire extinguisher identification chart on back cover. 16 pages, 3 1/4" x 6 3/8".



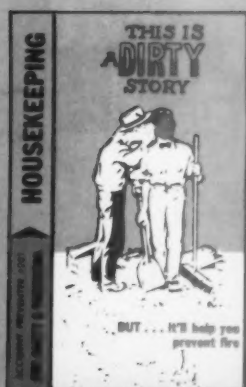
### PREVENT FIRE

Pictures common fire causes—how they can be spotted and eliminated. Stresses importance of knowing where emergency fire equipment is and how to use it. Photoscript. 16 pages, 3 1/2" x 6".



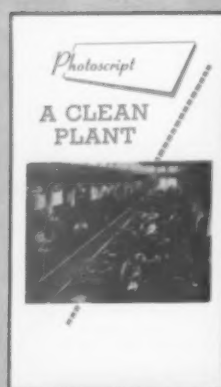
### CONTROL OF FIRE

What to do when fires start. It explains the different classes of fires, pictures the various types of extinguishers, how to use them, and on which type of fire. Photoscript. 16 pages, 3 1/2" x 6".



### HOUSEKEEPING

Accident Preventer 201, illustrates that good housekeeping isn't just for looks—it prevents fires. Warns against piling materials near heat, leaving rags, rubbish or sawdust shavings on floor, and blocking fire extinguishers and sprinklers. 4 pages, 3" x 5".



### A CLEAN PLANT

A clean plant is safer, more efficient, a better place to work. This photoscript points out that plant housekeeping is the responsibility of each worker. Photoscript. 16 pages, 3 1/2" x 6".



### K. O. DIRT AND DISORDER

Sells workers on plant housekeeping. Colorful cartoons and light-touch writing drive home important points in keeping the plant clean, neat and orderly . . . free from accident and fire hazards. 16 pages, 3" x 5 1/2".



### THE MAN WITH THE BADGE

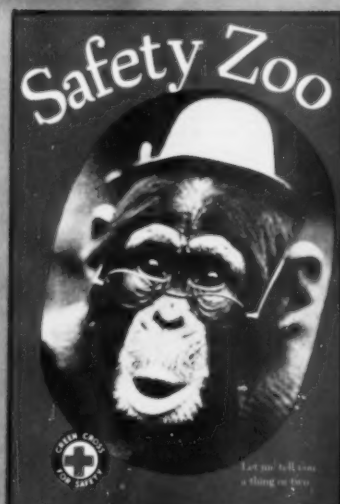
Shows safety committeemen how to deal with committee problems, tips on conducting safety inspections, committee meetings, getting along with supervisors and workers. Cartoon illustrations. 64 pages, 4" x 6 1/2".





#### AREN'T PEOPLE FUNNY?

Illustrates a number of common human foibles and faults that can lead to accidents. It shows in humorous fashion the relationships between attitudes and unsafe behavior, spotlighting various unsafe characters. 16 pages—3" x 5½".



#### SAFETY ZOO

Pokes fun at human foibles with an amazing collection of animal photos combined with clever captions. Safety committeemen and foremen will especially enjoy it. 32 pages, 5½" x 8".



#### WHAT'S IN IT FOR ME?

A booklet that points out to the worker the personal advantages of practicing safety. Proves that it's not where he works, but how he works that makes for good safety records. Humorous illustrations, serious text. Full color. 16 pages, 4" x 9".



#### DEADLY IDEAS

A comic-type booklet in full color. It routs out seven foolish attitudes that hamper accident prevention . . . blasts them with a double-barreled charge of logic and lampoon. 16 pages, 4" x 9".



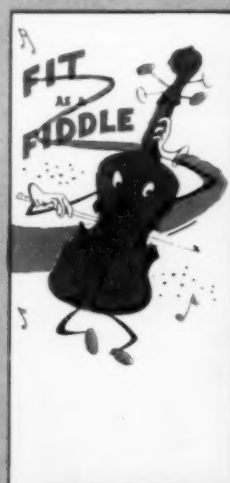
#### IN THE PINK

A Walt Ditzen cartoon-illustrated booklet presenting basic rules for good health, with a fresh approach. Covers posture, sleep, eye and foot care, weight, cleanliness, and first aid. 16 pages, 3" x 5½".



#### DOWN TIME

Crammed with helpful facts that keep workers healthy and on the job. Deals with personal housekeeping, proper diet, relaxation and medical care. Fun to read, with lots of cartoons. 16 pages, 3" x 5½".



#### FIT AS A FIDDLE

Produced in collaboration with the American Medical Association, this booklet shows your workers how really easy it is to stay healthy . . . how they'll live longer, feel better, and have more fun just by following the simple rules presented. Full of bright cartoons. 4 colors, 16 pages, 3¾" x 7¾".



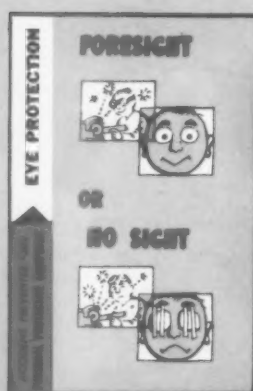
#### SKIN CARE

Accident Preventer 402 points out how oil or grease left on the skin can cause boils, rashes, and lead to infection . . . and that cleanliness is essential. Also covered is use of protective garments in handling irritating chemicals and other materials. 4 pages, 3" x 5".



#### PROTECT YOUR EYES

Illustrates the two good reasons for wearing safety glasses—both your eyes. Gives the prescription for eye safety; wear the right glasses, make sure they fit, and keep them clean. Photocript. 16 pages, 3 1/2" x 6".



#### EYE PROTECTION

Accident Preventer 302 offers a pictorial list of types of eye protective devices and the uses of each. It also gives some helpful tips on care and cleaning of safety goggles. 4 pages, 3" x 5".



#### GET FIRST AID

Stresses the importance of immediate first aid for ALL injuries. Tells workers that a minor scratch—untreated—can result in a crippling injury; never take a chance. Photocript. 16 pages, 3 1/2" x 6".



#### GET FIRST AID FAST

Accident Preventer 401, shows how minor cuts and bruises may result in serious illness without first-aid. Tells what to do in emergency for chemical burns, eye injuries, splinters, mild and serious burns. 4 pages, 3" x 5".



#### DRESS FOR SAFETY

Stresses clothing that fits you and your job, and the need for special protection on special jobs. Covers goggles, hard hats, safety shoes, gloves, etc. Photocript. 16 pages, 3 1/2" x 6".



#### SAFE CLOTHING

Accident Presenter 301, uses "right and wrong way" illustrations and straightforward captions to show workers the proper way to dress for work—the possible danger resulting from wearing improper clothing around machinery, on stairways or ladders. 4 pages, 3" x 5".



#### FIRST AID REMINDERS

This set of nine leaflets is designed for quick reference in emergencies, and for effective first aid instruction. Size 3 1/2" x 6 1/4", 4 to 6 pages, in attractive colors.

Titles are:

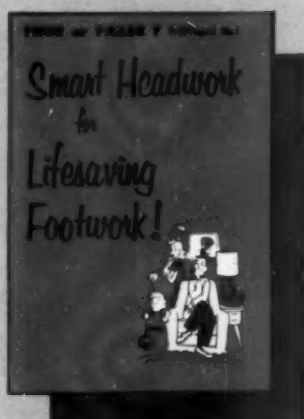
What To Do For a Wound—For Shock  
What To Do For Bleeding  
What To Do For a Broken Bone  
What To Do For Heat Cramps, Heat Exhaustion, Sunstroke and Fainting  
What To Do For Poisoning

Artificial Respiration (Schaffer)  
Artificial Respiration (Arm-lift)  
What To Do For Bruises, Sprains, and Strains—How To Move An Injured Person  
What To Do For Burns and Scalds



### YOUR 10,000 MILE LIVING ROOM

A new slant on safety. Common sense captions drive home the need for courtesy, safe speed, good manners and safe practices to prevent costly accidents both at home and on the road. 12 pages, 3" x 6".



### SMART HEADWORK FOR LIFESAVING FOOTWORK

An illustrated quiz-game booklet that teaches pedestrian safety. Each of the 7, true-false questions, illustrated with bright cartoons, is answered in detail on the following pages. Full color, 16 pages, 5 1/8" x 7 1/8".



### YOU ARE AN S.P.

A humorous look at the various types of pedestrians, designed to 'needle' the reader into a good look at his own street crossing habits. 4 pages, 4" x 9".



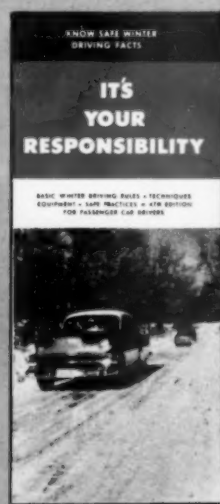
### ANDY LARKIN

Andy Larkin, a veteran ambulance driver shows a new driver how to drive safely to observe the rules of the road, and the reasons for following them, in this four-color comic book. 16 pages. 6 3/4" x 10".



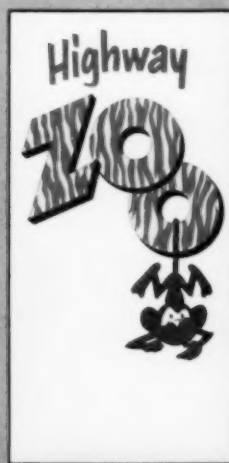
### MAC HINES—TROOPER

An unusual comic-type traffic safety booklet that forcibly illustrates how and why accidents happen and what can be done to help avoid them. Everyone who sits behind the wheel of a car should have a copy of this booklet—especially the teenage drivers. 4-color, 16 pages. 6 1/2" x 10 1/2".



### IT'S YOUR RESPONSIBILITY

Prepared by the Committee on Winter Driving Hazards and directed to the average driver. Offers test proven facts on things to do before winter comes, and on starting, stopping, and keeping up with traffic, under winter conditions. 16 pages, 3 7/8" x 8 7/8".



### HIGHWAY ZOO

A clever cartoon booklet, showing that animals are the craziest people—when they act like people. These hilarious characters point out driver faults common to today's traffic. Ideal for off-the-job safety programs. 4-color, 16 pages. 3 7/8" x 8".



### 'BE YOUR OWN TRAFFIC JUDGE

A can't-be-resisted quiz booklet for truck drivers, driver salesmen, passenger car driving plant personnel. It poses 6 traffic problems, and offers 6 'true and false' questions on each. Answers are on pages following questions. Illustrated. 16 pages, 5 1/2" x 8 1/2".

## Employee training

**A THREE DAY WEEKEND**

Tells your employees that you want their Labor Day weekend to be full of fun—but that you want them to come back to the job safe and sound. 4 pages, 3" x 5 1/8".

**HAVE A HOLIDAY**

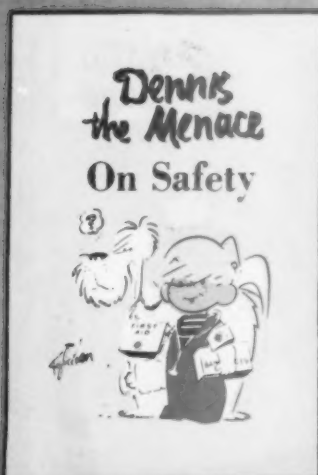
A holiday send-off leaflet that does double duty—expresses warm holiday wishes and reminds workers to return to the plant safe and sound both at Christmas and New Years. Cleverly illustrated. 4 pages, 3" x 5 1/8".

**THANKS FOR A SAFE YEAR**

A holiday leaflet that expresses to your employees thanks for working safely and a wish that the coming year will also be a safe one. 4 pages, 3" x 5 1/8".

**HAVE A GOOD TIME**

An attractive, readable booklet for vacation bound employees. Presents safety tips on motoring, swimming, hunting and camping. Shows workers how to have fun while avoiding vacation hazards. Full color, 8 pages, 4" x 8".

**DENNIS THE MENACE ON SAFETY**

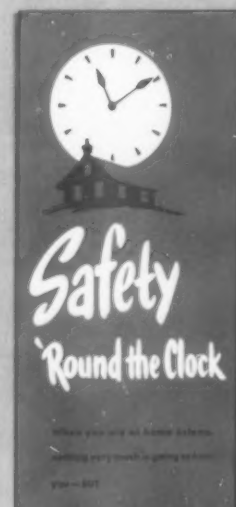
America's favorite moppet makes some pertinent points on safety in this special cartoon booklet. His to-the-point comments on everything from unsafe driving, to the wrong way of slicing a potato provide many a chuckle—and a lot of food for thought. Full color, 16 pages, 5 1/8" x 7 1/8".

**SAFE AT HOME**

This booklet is packed with suggestions for eliminating hazards in every room of the house. Lists safe practices and danger signals and includes section on safety for children and aged. 16 pages, 4" x 7 1/4".

**NICE GOING, POP!**

A general safety booklet for the worker's whole family, with special emphasis on the safety of his children. Covers prevention of traffic accidents, drowning, burns, falls, cuts, poisoning, mechanical suffocation, and wounds from firearms. Cartoon illustrated. Full color, 8 pages, 3 3/8" x 8".

**SAFETY 'ROUND THE CLOCK**

Extends interest in safety to the home and to the worker's family. It gives hour by hour hints on home safety, from the time to rise until the cat is put out for the night. Cartoon illustrated. 8 pages, 3 1/2" x 8".





#### DEFENSIVE DRIVING

Two popular 24-page booklets filled with sound tips on good driving, backed up with cartoon illustrations picturing the folly of aggressive or sloppy driving habits. Designed to convince drivers that preventing accidents is not so much the knack of squeezing out of tight spots as it is the ability to anticipate and avoid such situations in the first place. 3" x 5". Specify choice of Truck or Bus edition.

#### HOW TO BE A SMOOTH OPERATOR

A booklet revealing the secret of smooth operation—the skillful coordination of driver, vehicle and traffic. Points out how it will prevent accidents, spare the driver's nerves and stretch the life of the vehicle. 24 pages, 3" x 5".

#### FOR EXPERTS ONLY

Explains the rules governing the Safe Driver Award, and shows your drivers how they will benefit personally by winning it — makes them want to qualify. And it clearly explains the principles of "defensive driving" . . . the standard code of professional driving.



#### PASSENGER SAFETY

A driver training booklet that shows bus drivers how they can prevent boarding, alighting, and on-board accidents. Covers skills and attitudes that safeguard the rider from the time he steps off the curb to board the bus until he has alighted. 24 pages, 3" x 5".

#### IT'S UP TO YOU

Prepared by the Committee on Winter Driving Hazards and based upon the findings of intensive tests of vehicles, in actual winter conditions, this booklet offers factual tips on winter driving techniques for truck drivers. 28 pages 3 1/2" x 9".

#### THE YOU FACTOR IN ACCIDENT CAUSES

Aimed at the basic underlying personal factors that cause transportation accidents. Its 24 pages strike home with every YOU factor from temper to worry. The cartoons invite reading and the hard hitting text spares no punches in showing drivers how important these factors are in accident causes. 3 1/2" x 5 1/2". Specify choice of Truck or Bus Edition.

# Safety Decals

**SPRINKLER VALVE**  
**DO NOT CLOSE UNLESS**  
**AUTHORIZED**

**DANGER**

**WEAR GOGGLES**  
**WHILE OPERATING**  
**THIS MACHINE**

**KEEP FLOOR CLEAN**  
**AROUND THIS**  
**MACHINE**

ACTUAL SIZE  
2" x 3 1/2"

**CAUTION**  
**STOP MACHINE**  
**BEFORE MAKING**  
**ADJUSTMENT**

Safety decals attached to machine frames, guards, fuse boxes and fire doors constantly remind workers to observe safe practices and follow instructions. These colorful decals conform to ASA specifications. Order by letter and number code. Available only in size 2" x 3 1/2".



A Green Cross for Safety emblem printed in white letters on green ground, with the words "MEMBER NATIONAL SAFETY COUNCIL" underneath in green. For use on office doors or windows. Emblem is available in 2" and 3 1/2" sizes.

## SAFETY DECALS

- S- 1—Sound Warning at Corners and Aisle Crossings
- S- 3—Do Not Talk To or Distract Operator
- S- 4—Before Starting Be Sure Everyone Is in the Clear
- S- 5—No Riders
- S- 6—Keep Tools in Safe Condition and in Proper Place After Use

- S- 7—Keep Floor Clean Around This Machine
- S- 8—First Aid Kit
- S- 9—Only Authorized Persons May Change Fuses or Make Repairs
- S-10—Keep This Space Clear
- S-11—Deposit Waste Material Here
- S-13—Avoid Falls. Walk—Do Not Run—Use the Handrail
- S-14—Please Keep Your Locker Clean

## CAUTION DECALS

- C- 1—Shut Off Machine When Not in Use
- C- 2—Fire Door—Do Not Block
- C- 3—Shut Off Engine Before Refueling
- C- 4—To Be Operated Only by Authorized Employees
- C- 5—Pull and Lock Switch Before Oiling, Adjusting or Repairing Machine
- C- 6—Use Brush to Remove Chips

- C- 7—Stop Machine Before Making Adjustments
- C- 8—Use Fuse Puller to Remove Fuses
- C- 9—Do Not Operate Without Guards
- C-10—Keep Guards in Correct Adjustment
- C-13—Ground Equipment Before Use
- C-14—Do Not Use Near Electrical Equipment
- C-17—Do Not Open While Machine Is in Motion

## DANGER DECALS

- D- 1—Do Not Wear Gloves While Operating This Machine
- D- 2—High Voltage
- D- 4—Keep This Guard in Place
- D- 6—Wear Goggles While Operating This Machine
- D- 7—Flammable—Keep Flames and Heat Away
- D- 8—Corrosive Liquids—Use Personal Protective Equipment

- D- 9—220 Volts
- D-10—440 Volts
- D-12—No Smoking
- D-13—Wear Goggles in This Area
- D-14—Oxygen—Keep Oil and Grease Away
- D-15—Acid
- D-16—Caustic
- D-17—Replace Guard Before Using Machine

## FIRE DECALS

- F-1—For Wood, Paper, Textiles and Rubbish (Class A Fires) Not Electrical Equipment
- F-2—For Wood, Paper, Rubbish and Burning Liquids (Class A & B Fires) Not Electrical Equipment

- F-3—For Burning Liquids (Gasoline, Oil and Paint and Electrical Equipment) (Class B & C Fires)
- F-4—Sprinkler Valve—Do Not Close Unless Authorized

IT'S EASY TO SELL SAFETY WITH

# Safetygraphs!

## ILLUSTRATED SAFETY TALKS

Safetygraphs are visual aids for training small groups. They are easel presentations which employ time-tested methods developed by leading sales organizations to make their sales stories understandable and dramatic...and used successfully by the U. S. Army in training millions of World War II recruits rapidly and thoroughly.

Safetygraphs are complete within themselves and ready for use at a moment's notice. They consist of large (18" x 24") multicolor and spiral bound pages that turn easily and lie flat on a strong and durable easel which serves also as a carrying case.

Talks and illustrations are sprinkled with humor to insure audience attention...to help you put across your safety message in a smooth, interesting and convincing manner.



## HOW TO USE THEM...



Set the Safetygraph on any flat surface. Open the cover and the brown leatherette portfolio becomes an easel with an interesting illustration facing your audience. Demonstrations, questions and group participation suggestions are contained in instruction guides.

Anyone who can read can give a convincing safety talk. All you have to do is read aloud the safety talk printed in large and easy-to-read type, on the back of each page while your audience looks at the cartoons and photographs on the front side.



## HOW TO LIFT

**Safetygraph #1**  
Teaches workers efficient and safe procedures for lifting, handling and carrying materials. The rules stressed are: keep hands clear; get a good grip; have a good footing; bend your knees; keep the load close to you; get help for heavy or awkward loads.



**Safetygraph #2**  
Discusses eye protection around grinders; spacing for work rests; work pressure; exploding wheels; over-heating; checking for damage; checking speed ratings when changing wheels; ring-testing for defects; hood adjustments; dressing wheels; excessive vibration.



## LADDER SAFETY

**Safetygraph #6**  
Teaches the four primary rules of ladder safety: 1. Select the right ladder; 2. Inspect it before use—look for weakness or faulty repairs; 3. Secure it—place at proper angle, use non-slip feet, or lash; 4. Use properly—climb the safe way, secure tools.



## USING FIRE EXTINGUISHERS

**Safetygraph #7**  
Explains the classes of fires, what type of extinguisher to use for each, and how to use it. It also discusses what to do in case of fire. The safetygraph is most effective when used in a two-part course, part 2 being outdoor demonstrations of extinguishers on actual fires.



## OPERATING POWER PRESS

**Safetygraph #3**  
Emphasizes guarding—types of guards, and why the operator should use them. Also discussed are: use of sticks to remove pieces that are caught; special tools to insert and remove work; preventing damage to dies; proper dress; handling stock parts.



## ACCIDENTS DON'T HAPPEN

**Safetygraph #8**  
Gets right down to the grass root of safety—to the basic principle that accidents don't happen, they are caused. It discusses unsafe conditions and unsafe acts, cites specific instance of each type, and shows how each accident could have been prevented.



## WEARING GOGGLES

**Safetygraph #4**  
Is a head-long attack on complaint about wearing safety goggles. It shoots holes in time-worn excuses like: "they're too heavy"... "this job'll only take a minute." With humor and logic, it wins over non-believers and reconverts backsliders who have been careless about wearing goggles.



## COMMON HAND TOOLS

**Safetygraph #9**  
Shows how to avoid hand and finger injuries caused by hammers, wrenches, chisels, knives, files, and screw drivers. The four ways to prevent hand tool accidents are: use the right tool; use a tool in good condition; use it the right way; keep in a safe place.



## PLANT HOUSEKEEPING

**Safetygraph #5**  
Stresses it's up to workers to wipe up grease, put scrap in a box, keep the work place clear, and lockers clean. It discusses the safe way to stack materials: start foundations; keep piles straight; cross-tie layers; step-back of tall piles; keep aisles and fire exits clear.



## PREVENTING FIRE

**Safetygraph #10**  
Explains how it can be prevented by controlling two of the three fire components—heat and fuel. It discusses the major sources of heat in industrial fires; electricity; smoking, and the types of fuel involved in most industrial fires—greasy rags, flammable liquids, etc.



## TOE PROTECTION



### Safetygraph #11

Is a persuasive presentation of the facts about safety shoes. It examines all the common objections to wearing safety shoes, and proves that each is based on unfounded prejudice or lack of information. It also shows some off-the-job uses for safety shoes.

## FALLS



### Safetygraph #16

Shows that falls are one of the most serious sources of industrial accidents. It covers everything from plunging down unguarded elevator shafts to stumbling over objects. Shows how to prevent falls and discourages the use of makeshift equipment and horseplay.

## ELECTRICAL HAZARDS



### Safetygraph #12

Summs up important points to remember about electricity and electrical equipment. 1. Use good equipment. 2. Don't overload circuits. 3. Keep away from live conductors. 4. Ground an electrical tool before use. Discusses the common causes of electrical burns and injuries.

## DOES YOUR ACCIDENT SHOW?



### Safetygraph #17

Attacks the employee's attitudes which lead to accidents. It shows employees the reasons why people pull boners that can lead to injury: being "safety lazy," failure to follow rules, horseplay, distractions, failure to think, not "feeling up to par"

## INDUSTRIAL POWER TRUCKS



### Safetygraph #13

Discusses parking, loading, inspecting trucks, and safe driving practices. Illustrates the wrong ways to use a truck. Covers operating in close quarters, the safe way to approach and enter an elevator, etc. Drives home the main causes of plant truck accidents.

## MY ACING BACK



### Safetygraph #18

Treats the subject of back injuries—why and how they happen. The drawings show how the back functions, and what happens when it is strained or twisted. An effective way to drive home the proper ways to lift, and the need for securing help in lifting.

## ONLY A SCRATCH



### Safetygraph #14

Goes to work on how to get workers to use first-aid on little injuries. Shows how to treat different types of wounds such as punctures, lacerations, and incisions. Sells workers on the idea that protecting themselves against infection is a sign of good sense.

## STATIC SPARKS AND FLAMMABLE LIQUIDS



### Safetygraph #19

It spares no punches in showing your workers how static sparks are caused, how they ignite flammable liquids, how to bond against these dangers. The information will sink in, take hold, and help every time workers transfer flammable liquids.

## WANTED: SAFE WORKERS



### Safetygraph #15

An informal session on what makes a safe worker. Deals with the worker who understands his job and does it well, and with the fellow who learns the hard way. Covers, in story style, how to act at work, and dress at work. Stresses cooperation between fellow workers.

## OFF-THE-JOB SAFETY



### Safetygraph #20

Doesn't mince words. It is designed to help stop the off-the-job accident toll, at home, in recreation and in traffic. It illustrates hazards to watch out for, and makes workers stop, think and watch their step—and play it safe off-the-job.

# USE SAFETYGRAPHS AT YOUR SAFETY MEETINGS!

## SAVE YOUR OWN SKIN



### Safetygraph #21

Discusses the causes and danger of dermatitis. It shows workers how to protect their skin; the need for protective clothing, and for keeping it clean and in good condition; discourages the use of solvents, and encourages the use of protective creams, and first aid for all skin infections.

## HOW TO CONTROL BLEEDING



### Safetygraph #26

The latest techniques for stemming capillary venous and arterole bleeding. Includes the latest research by the Committee of Medicine of the National Research Council.

## CHEMICAL SPILLS AND SPLASHES



### Safetygraph #22

Emphasizes the dangers of liquid chemicals, their safe handling and transporting. It instructs workers to clearly identify them; how to empty drums, carboys and tank cars; what to do when chemicals are spilled, splashed on workers, or if they are overcome by chemical vapors.

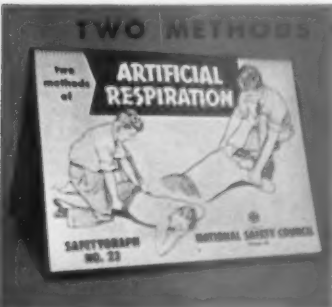
## FIRST AID TREATMENT FOR BURNS



### Safetygraph #27

Discusses what to do for burns, frost-bite, radiation and electric burns, as well as chemical burns of the eye and skin.

## TWO METHODS OF ARTIFICIAL RESPIRATION



**Safetygraph #23**—Large line drawings and clear-cut instructions simplify the job of teaching the Arm-Lift and Hip-Lift methods of artificial respiration. Safetygraph #23 is the only available visual training aid covering these methods, which are now officially accepted by virtually every national organization concerned with artificial respiration.

## TRANSPORTATION OF INJURED PERSONS



### Safetygraph #28

Covers examination of conscious and unconscious persons to determine spine or neck injuries, use of common industrial equipment to transport injured persons.

## RAMP SAFETY



**Safetygraph #24**—Covers a wide range of ramp equipment—fork lifts, cargo conveyors, passenger loading stands, tractors and freight carts, air conditioners and fuel trucks. Pertinent points in safe fueling operations, cargo handling and general ramp procedure are brought to light. Suitable for refresher training or indoctrination of new aviation personnel.

## WHY BACK INTO TROUBLE?



### Safetygraph #101

An illustrated safety talk for commercial truck drivers. It gets down to actual cases and teaches drivers when and why to avoid unnecessary backing, hazards to look for, curb parking hazards, how to back safely, and tells the safe backing speeds.

## TWO-WHEEL HAND TRUCKS



### Safetygraph #25

Shows the correct use and handling of a two-wheel hand truck. It discusses how to load and unload materials, difficult loads, the proper way to lift materials, careful procedure at corners and intersections and the proper use of hand trucks on inclined surfaces.

## YOUR MARGIN FOR SAFETY AT INTERSECTIONS



### Safetygraph #102

Contains suggestions for commercial vehicle drivers on how to prevent accidents at intersections. It warns to be suspicious of all intersections, to avoid sudden stops, to obey traffic signals, how to make left turns, and to be on the alert for pedestrians.

# Safety

## training films



Trainees learn as much as 55% faster, and remember up to 70% more—and longer—when films are used to help teach. This means that you can cut down new-worker safety training time, give fewer refresher courses, and still get better results by using films.

Each National Safety Council film has been carefully planned to do a specific job in your safety program—to serve as an effective discussion springboard for supervisor and worker meetings.

All fundamental and general interest films are designed to cut across industry lines. Specific industry backgrounds are minimized; emphasis is on safe practices—not environment.

### 35mm Sound Slidefilms

Most of the films described on the following pages consist of a 35mm filmstrip and a 33 $\frac{1}{3}$  RPM recording. Many of these films are also produced in 16mm sound-motion. All 35mm sound slidefilms released since 1948 (marked with this symbol  $\oplus$ ) can be shown with either a standard projector or the new automatic 30-50 low frequency models. One side of the sound slidefilm recordings uses an inaudible signal to automatically advance each picture in synchronization with the narration.

### Previews and Rentals

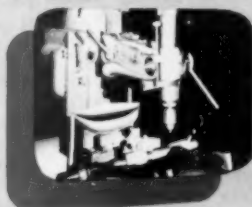
Individual films and film sets may be previewed prior to purchase. Preview service charge is waived if the film is retained. The preview charge is NOT a rental fee. It is necessary to offset the Council's expense in rendering a preview service—the packing, postage and return inspection charges billed the Council by its various film producers for each shipment; replacement costs for lost or damaged films; and, the clerical and administrative cost of processing each order. Both Rental and Preview charges are per week or fraction thereof exclusive of time in transit.

Preview and rental service is available only within the continental limits of the U.S.A. unless the member agrees to pay air-mail postage both ways. Canadian members may obtain all Council-produced films for either rental or preview from the Canadian Film Institute, 142 Sparks Street, Ottawa 4, Ontario, Canada.

## 4 brand new films

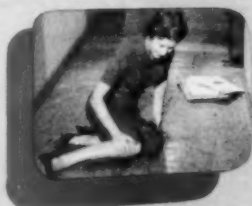
### FRIENDLY MACHINES

An instructive and amusing combination of live action and animation. A number of shop machines—lift truck, punch press, and others—come to life to show their operators that safe work practices reduce accidents, and that machines themselves do not cause accidents unless poorly handled. Running time 10 minutes. 16mm black and white, sound motion picture, or 35mm sound slidefilm.



### DOWN AT THE OFFICE

A secretary and her boss discover that some very minor things can cause some really serious falls. The film stresses the importance of good housekeeping and of picking up even such a seemingly harmless thing as a paper clip. 10 minutes running time. 16mm black and white, sound motion picture.



### SO YOU'RE NEW AROUND HERE

An indoctrination film for newly hired workers. Presents sound, understandable reasons for having a plant safety program, and stresses the importance of each worker's cooperation in the program. Running time 10 minutes. 16mm black and white, sound motion picture, or 35mm sound slidefilm.



### VACATION SAFETY

A vacation is for recreation and relaxation—but it can become a nightmare of sunburn, strains and sprains. The film points out how the worker, the head of the family, must take on the roles of lifeguard, athletic instructor, smallboat expert, forest ranger, etc., to keep his family safe and sound. Offers plenty of tips on filling each role . . . and also reminds the worker to take care of himself, too. 10 minutes running time. 16mm black and white, sound motion picture.



## Employee training



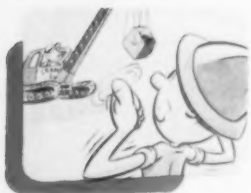
### SAFETY RECORD

Emphasizes that award winning safety records don't "just happen." They are the results of careful planning and hard work. They are the accomplishment of the individual worker who adopts a "be safe" attitude for himself and towards his fellow workers. 15 minutes.



### 2 STEPS TO SAFETY

This film shows that you've got to mix determination with knowledge and experience. **KNOW YOUR JOB**—be thoroughly aware of the possible hazards; how to avoid them. **KNOW YOURSELF**—the personal peculiarities that make for accidents; how to control them. 15 minutes.



### LET HABIT HELP

Explains the steps in developing a new habit pattern; how to erase an unsafe habit. Each routine task is accomplished largely by one or more of the habit sequences we form. It's as easy to build safety into your habits as it is to do things unsafely. 15 minutes.



### GET A GRIP ON YOURSELF

Enlarges on the idea of self understanding. Shows how feelings and emotions can undermine determination. Explains how to recognize the danger signals in time—make your emotions work for instead of against you. 15 minutes.



### DECIDE TO BE SAFE

Wraps up the formula for personal safety with a quick review of the key points made in the previous films. To make it all work, it explains, each of us has to underline our efforts with determination—a sincere decision to be safe. 15 minutes.

## "PERSONAL SIDE OF SAFETY"

**corrects unsafe attitudes by helping your workers to ANALYZE and UNDERSTAND themselves**

With a front-door approach and stair step logic, **PERSONAL SIDE OF SAFETY** reduces this complex attitude business to easily understood fundamentals. The five films build a convincing formula for personal safety that shows a worker that no one can keep him from getting hurt if he doesn't help. He must know his job and know himself; be the master of his habits and emotions; believe in the power of safety; **WORK AT IT!** The message is believable because each worker sees himself in the humorous cartoon sequences and actual work scenes. It's painless training at its best. The series is available as a set of 35mm sound slidefilms and as a set of 16mm sound motion pictures.



### AN ACCIDENT HAPPENS TO SAM

Your workers will learn and laugh as the accident-wise industrial nurse, Miss Miller, proves to skeptical Sam that accidents DON'T just happen. She first softens him up by showing him some "scare" pictures of major accident injuries; then follows up by explaining why they happened. By the end of the day, Sam's converted. 13 minutes. Black and white. 35mm sound slidefilm. Also 16mm motion-picture.



### TAKE TIME TO LIVE

The film proves that nine out of ten accidents in the home or on the street are caused by rushing. Figures from an actual test prove that allowing only 5 minutes more a day will prevent hurrying and give a worker time to get to and from work with ease and safety. 12 minutes. Black and white. 35mm sound slidefilm. Also 16mm sound-motion picture.



### IF YOU TOOK YOUR FAMILY TO WORK WITH YOU

The film evolves about a work day in the life of Jerry Reynolds. Jerry keeps imagining he sees his son, Butch, watching him do things that violate the safety rules. He realizes that he should practice safety on the job just as though his family were with him—waiting for him to break some of the rules he's been preaching to them. 13 minutes. Black and white. 35mm sound slidefilm. Also 16mm sound-motion picture.



### YOU CAN TAKE IT WITH YOU

A humorous story of the worker who won't go home after a series of nerve-shattering home accidents. The boss finally convinces him that he CAN stop home accidents just like they do on-the-job. The film touches on all phases of home safety. 13 minutes. 35mm sound slidefilm in full color. Also 16mm sound-motion in full color, or black and white.



# 10 FILM WORKER TRAINING COURSE

## EVERYTHING you need to run a complete course in safety fundamentals.

Ten of the 35mm sound slidefilms produced by the Council have been selected for use, in a series, as a basic safety training course for workers. By progressing step-by-step through the course, workers obtain a well-rounded fund of safety knowledge in amounts they can absorb and remember. The

course can be put on easily, and with practically no time-consuming preparation. With the leader's manual provided for each subject, anyone can do an effective job. The set is packed in a sturdy leatherette-bound carrying case.



### FIFTEEN MINUTES TO GO

Dramatically compares the odds of getting an infection in a small cut or scratch with "Russian Roulette". They're in your favor, but would you take the chance? Actual photos of wounds, burns, and scratches before and after infection show your workers that it's smart to invest "15 minutes" to get immediate medical attention. 35mm, 15 minutes.



### EASY ON THE EYES

Begins with a dramatic, emotional appeal that shows what it means to be blind or lose the sight of an eye. After this impact, your workers will be an attentive audience to the job-by-job explanation of the type of eye protection required; the three easy rules for eye safety. 35mm, 20 minutes. Also 16mm sound motion.



### NO LAUGHING MATTER

Here's a film that covers falls from every angle. It shows how to stop falls in every work situation: trucks and trailers, ladders, scaffolds, elevator shafts, stock piles, stairs. Emphasizes importance of keeping the work area clean; eliminating oil and grease on floors. 35mm, 15 minutes.



### STOP THE FIRE THIEF

Actual fire scenes, illustrating how costly and terrible fire can be, lead into a discussion of what can be done to root out the hazards encountered with flammable liquids, electricity, hot slag, sparks, friction, etc. 35mm, 13 minutes. Also 16mm sound motion.



### SAFE HANDLING OF MATERIALS

Shows how to avoid the three major kinds of injury—to hands, feet, and back—that can result from improper handling of materials. Covers lifting and carrying techniques, precautions, use of gloves and safety shoes. 35mm, 15 minutes.



### SAFE IN HAND

Part I, Machinists' Tools, shows how to pick the right tool for the job; how to use each safely. Covers all the common hand tools. Part II, Maintenance Tools, discusses the heavier tools used by plant maintenance crews. 35mm, 12 minutes for each part.



### WHAT'S YOUR SAFETY I. Q.?

This film gets your workers thinking about off-the-job safety. After each set of pictures is flashed on the screen, the audience is given 15 seconds to spot the safety errors. They then check their answers as the narrator identifies the hazards; explains how to avoid them. 35mm, 15 minutes. Also 16mm sound motion.



### LEARN AND LIVE

Your company rule book probably includes the 10 fundamental safety rules discussed and illustrated in LEARN AND LIVE. The film lifts these rules from your book and brings them to life with action shots showing how and why they are applied. 35mm, 15 minutes.



### KEEP IT CLEAN

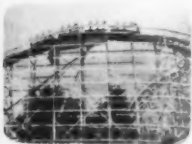
Sells the idea that it's easy to keep the plant ship-shape if everyone cooperates. Presents an easy-to-follow housekeeping checklist keyed to a series of before and after shots of typical plant scenes. Emphasizes that a clean plant makes the job easier, safer, a lot more pleasant. 35mm, 15 minutes.



### CAUSE AND CURE

Accidents have definite causes and definite cures. This film shows—with actual case histories—how supervisors and workers can root out accidents before they happen; what to look for and how to correct it. 35mm, 17 minutes.

## Employee training



### SAFE AS YOU MAKE IT

Combines sound safety training with amusement park thrills by contrasting the safety of the high rides with the hazards of the safe-appearing things we encounter every day. Each individual must observe the simple safety rules, weed out the hazards and not take foolish chances. This fast moving film captures interest. 10 minutes. Black and white, 16mm sound motion.



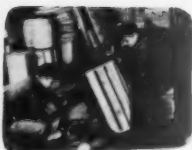
### FOR SAFETY'S SAKE

An excellent training film for all workers that use portable power tools. Shows how to use, inspect and maintain drills, grinders, saws and other electric hand tools with emphasis on the basic safety precautions. 15 minutes, 16mm motion picture.



### MY EYE DEAL

Color cartoon film that combines giggles with goggles. Tells the humorous story of Markimer and how he learned—by a near miss—the value of wearing safety goggles. Here's 10 minutes of good entertainment with a moral that your workers won't soon forget. Full color. 35mm sound slidefilm.



### FREIGHT HANDLING SAFETY

Shows the worker how to lift, carry, and pile materials; how to safely operate a hand-truck. The main emphasis is on freight car and motor truck unloading hazards: the safe way to open a freight car door; lowering the dock plate into position and anchoring it; how to guard against "sleepers." The film is in story form and features a luctless cartoon character named Happy Jack whose exploits will hold your workers' interest. 11 minutes. Full color. 35mm sound slidefilm. Also 16mm motion picture.



### OPEN FOR INFECTION

Warns against the dangers of neglecting even the smallest scratch and stresses the importance of workers receiving prompt first-aid treatment. 25 minutes. Black and white. 35mm sound slidefilm.



### SAFE ALL AROUND

An off-the-job safety film dealing with the lethal hazards found in and around the home, showing workers how to spot them. Hazards are analyzed and methods for their elimination suggested. 18 minutes. Black and white. 35mm sound slidefilm.

### GRIME DOESN'T PAY

The importance of good housekeeping in preventing plant accidents. Story depicts a man hunt for the criminal "Poor Housekeeping," who is finally tracked down and thrown out by "Good Housekeeping," convincing workers that "grime doesn't pay." 15 minutes. Black and white. 35mm sound slidefilm.



### RULES FOR TOOLS

Dramatizes safe practices in the use of small hand tools. Explains the four basic rules: select the right tool, be sure it's in good condition, use it properly, and put it away safely. 20 minutes. Black and white. 35mm sound slidefilm.



### FIRE

Shows how a careless flip of a match causes a large plant to burn down—put hundreds of employees out of work. This film is an appeal for caution on the part of every employee. 25 minutes. Black and white. 35mm sound slidefilm.



### CAUSE FOR ALARM

Gives a step-by-step description of what to do in case of fire; how to turn in an alarm—then what to do while you're waiting for the professional fire-fighters. In simple terms, it explains what fire is, how they start. It shows workers how to recognize the difference between Class A, B, and C fires; the types of extinguishers—when and how they should be used. 13 minutes. Full color. 35mm sound slidefilm. Also 16mm motion picture.



### THE FALL GUY

Points out that falls are one of the major causes of lost time accidents in most industries. Discusses the hazards that cause various types of falls and how to avoid them. 25 minutes. Black and white. 35mm sound slidefilm.



### HANDLE WITH CARE

Illustrates how to handle and move materials within the plant—the safe practices and precautions in lifting, carrying and piling, that must be observed, and use of personal protective equipment. 20 minutes. Black and white. 35mm sound slidefilm.





### GIANT HANDS OF INDUSTRY

Points out the two main causes of crane accidents are failure to use correct hand signals and failure to keep in the clear. Explains the three basic movements of a crane; the standard hand signals for each. The film goes on to give other safety tips: don't overload—check load-limit charts, how to place sling hooks, balancing long objects, and how to use hand hooks to guide load. These points are driven home by showing accidents that happened when someone "forgot." 15 minutes. 35mm sound slidefilm.



### CONSTRUCTION EQUIPMENT SAFETY

A dozen common mistakes account for three out of four accidents with construction equipment. Among the safety rules covered are: keep equipment a safe distance from power lines, make sure everyone is clear before you move machinery, block suspended parts before repairing or moving. A must film for all tractor, crane, dragline, shovel, and truck users. 20 minutes. 35mm sound slidefilm.



### WOODWORKING MACHINES

Covers all phases of safety in woodshop from guards and machine operation to housekeeping and eye protection. Gus, an old, safety-wise woodworker, takes two new safety committee recruits on a machine-by-machine tour of the plant. With actual demonstrations, he shows them the importance of guards; how they work, as well as the safe practices to follow in using saws, splitters, jointers, shapers, and planers. 17 minutes. 35mm sound slidefilm.



### LABORATORY GLASSWARE

Most laboratory accidents are caused by improper handling of glass equipment. This film shows the simple precautions to observe: wear gloves, fire-polish sharp edges, don't try to force glass into the wrong size rubber hose, loosen tube from stopper before you try to take it out, clear solvents from glassware before using, clamp equipment carefully, clean up broken glass immediately. 10 minutes. 35mm sound slidefilm.



### WOVEN WITH SAFETY

The safety committee of a large textile mill, meeting to discuss their over-all accident problem, agree that it's the little things that cause most of the accidents; that they can be stopped if the mill workers will heed the fundamental rules: never clean, repair, or adjust the parts of a machine while it is moving; keep guards in place; keep knives and scissors where they belong; lift properly; get first aid promptly; don't wear loose clothing near machines. 15 minutes. 35mm sound slidefilm.



### MINUTE MEN

"Service with Safety" is the slogan of the utilities industry, and they back it up with extensive safety training. The film illustrates a typical training program—the safe practices stressed. Covers: how to safely climb a wooden pole, how to work on top of the pole, the use and care of protective equipment such as rubber gloves and safety belts, how to use a grounding stick, instruction in artificial resuscitation. 20 minutes. 35mm sound slidefilm.

### SAWMILL SAFETY

A mill superintendent's tour of the plant with a new worker sets the stage for a job-by-job summary of safety in all phases of sawmill operations. The superintendent emphasizes the importance of keeping guards in place; the safe practices in using or working near edgers, cut-off saws, small pull saws, planers, piling machines, and carriers. The need for prompt first aid, housekeeping, personal protective equipment are also stressed. 17 minutes. 35mm sound slidefilm.



### OPERATING HEAVY DUTY

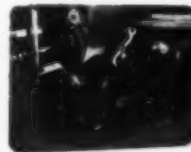
#### TRUCKS SAFELY

Training film covers the highly specialized operation of heavy earth-moving trucks. Filmed on-the-job, it covers the hazards operators will encounter; safe practices in driving, dumping, towing and loading. Suitable for construction companies, quarries, and all types of open-pit operations. 12 minutes. 35mm sound slidefilm.



### MEN AND MOTIVE POWER

Shows that while a railroad roundhouse is a busy place, it can be a safe place too, if everyone observes the fundamental safety rules. Shows how to work safely on top of tanks and boilers, in cabs, and on ladders and scaffolds. Stresses trip and slip hazards on floors; need for housekeeping. Concludes with a discussion of shop tools, mechanical material handling equipment, protective equipment, importance of first aid. 15 minutes. 35mm sound slidefilm.



### KEEP 'EM ROLLING

Here's a film that will tell your freight car men both the big things and the little things they have to do to protect themselves and others from injury. The film stresses the precautions necessary in working near moving cars; use of blue warning flags; how to safely cross between cars. Also discusses the use of jacks and blocks; handling of coil springs; fall hazards; use of burner's torch, sledges and other tools; lifting with cranes and hoists. 15 minutes. 35mm sound slidefilm.



### SAFELY WE WORK

Based on the years of experience that have established the safe ways of doing every job in railroading. Explains how to get on and off a moving car; how to climb freight and tank cars; how to ride the top of a car or on the still step of a box car or gondola. Points out the warning signs in territory where car riding is prohibited; the safe use of hand, power, and air brakes; how to walk across or between tracks—many other vital safe practices. 15 minutes. 35mm sound slidefilm.



### MEN OF MAINTENANCE

Railroad maintenance work is hazardous; demands extra precaution. Film stresses the safe practices relating to motor track cars: operation, inspection, emergency signal equipment, loading and placing of tools, getting the car on and off the track. Also discusses the safe use of all the basic tools and equipment. 15 minutes. 35mm sound slidefilm.



## Employee training



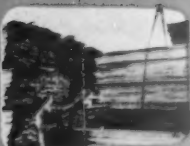
### BAR IT DOWN

Deals with the most outstanding hazards found in most mining operations—falling rock or ore from drifts, slopes, and similar openings. Right and wrong methods of removing loose ore or rock are emphasized. Includes pictures of barring down under timber protection, using different length bars for different operations, standing clear of loose materials, etc. 35mm silent slidefilm, in color. Also available in 2" x 2" color slides.



### JACK HAMMER SAFETY

Illustrates the standard safe practices in drilling and blasting operations. Stresses the importance of keeping the jackhammer in good condition; protective equipment for the operator. 35mm silent slidefilm.



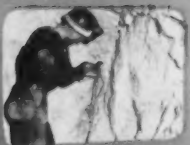
### BUILDING CONSTRUCTION SAFETY

Aimed directly at the old superstition that each story of a building is paid for with the life of a worker. Covers demolition, steel scaffolding, ladders, unguarded floor openings, concrete placement, material hoists, housekeeping and other factors. 36 frames. Black and white. 35mm silent slidefilm.



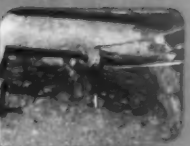
### SAFE HAULAGE IN COAL MINES

Covers all the safety factors involved in haulage operations. Stresses the importance of car and motor maintenance. Interest is heightened with real accident scenes. Black and white. 35mm silent slidefilm.



### BLASTING SAFELY IN MINES

Demonstrates the know-how and skill necessary in using explosives. Shows how and where to store explosives—the precautions that must be taken. Black and white 35mm silent slidefilm.



### FALLING GROUND

Deals with prevention of rock and ore falling from back and sides of mine openings—the biggest hazard in the mining industry. Shows safe practices in detecting 'loose', taking it down, and supporting it. 15 minutes running time, 35mm black and white sound slidefilm.

### SMOOTH OPERATION

Driving a truck in city traffic needn't be a nerve-fraying ordeal. The secret is smooth operation—the skillful coordination of driver, vehicle and traffic. Sudden stops, starts and turns are apt to catch other drivers off guard. Stresses proper signaling and a quick check of the rear view mirror. A sportsmanlike attitude leaves the driver relaxed and smiling at the end of the day. 16 minutes. 35mm sound slidefilm. Also 16mm motion version.

### IF IT HAPPENS

Three important things to remember if an accident occurs: 1. keep the accident from getting worse—set out flares; 2. record all the facts—get all names, addresses, license numbers, etc.; 3. get your vehicle back on the job as soon as possible. 20 minutes. 35mm sound slidefilm.

### P. U. D. DRIVER WINS AGAIN

The story of a typical day in the life of a pick-up and delivery driver—how he resists the temptation to ignore the safety rules. Points out that the real professionals are the best drivers on the road. They check their trucks every morning, they look both ways before entering traffic and at intersections, they stay within the posted speed limit, make their turns from the proper lanes, follow at safe distances, are courteous to other drivers. 20 minutes. 35mm sound slidefilm.

### DEFENSIVE DRIVING

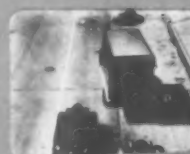
Tells your drivers that preventing accidents is not so much the knack of squeezing out of tight places as it is the ability to dodge trouble BEFORE they get into it. Keep your equipment in safe condition, follow at a safe distance, stop slowly, use hand signals, consider others. 20 minutes. 35mm sound slidefilm.

### PILOTE OF THE HIGHWAY

Moves from the first interview to the day the new man becomes a full-fledged "pilot of the highway". An excellent indoctrination film that covers all the safety fundamentals; gives the "why" behind your careful training efforts. Covers emergency maintenance, vehicle inspection, I.C.C. speed regulations, road signs, standard hand signals. 20 minutes. 35mm sound slidefilm.

### TO YOUR HEALTH

Designed for use of industrial nurses to interest student nurses in problems of industrial health. Points out the advantages of complete examinations of workers before they go on a job. 8 minutes running time, 35mm black and white sound slidefilm.





# The Professional Safe Driving Series

—5 safety psychology films aimed squarely at experienced drivers

The late Wilbur Shaw, former President of the Indianapolis Speedway Corporation and three-time winner of the 500 mile classic, narrates this popular film series that dramatizes the whys and hows of safe driving. Shaw demonstrates that the right kind of practice, sensible health habits, concentration and correct mental attitude are as necessary to keep a professional driver from having accidents as to keep a professional athlete in winning form. Big name baseball, bowling and golf stars contrast the fine points of their sports with the skill and finesse the "pro" drivers rely on to maintain their safety records. Available in 16mm, color or black and white. Running time of each film, 10 minutes.



## SKILL IS YOUR BUSINESS

Wilbur Shaw illustrates that with relaxed coordination, professional driving skill can become automatic — can be maintained day after day regardless of adverse traffic conditions or unexpected emergencies.

## THE CHAMP BECOMES DEAF AND BLIND

Lloyd Mangrum points out that the ability to shut out distractions makes the difference between a championship golfer and a duffer — and that concentration is just as important to pro drivers as it is to pro golfers.

## NINETY-DAY FLASH

Paul Richards, prominent baseball figure, shows how a slight miscalculation repeated often enough can become a disastrous habit, and how a small driving error, repeated frequently will lead inevitably to accidents.

## WATCH YOUR HANDICAP

Ned Day, long-time bowling champion explains that drivers, like professional bowlers, can handicap their performances through lack of sleep, improper food and health habits. The film correlates clean living habits with clean driving records.

## TAKE A LOOK AT THE ODDS

The concluding film in the series shows that the right attitude towards safety is the best insurance against accidents — proves that the odds are always in favor of the driver who plays it safe.

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#### GREEN CROSS FLAG

Dramatic evidence of accident-free days. A Green Cross Flag is an effective way of advertising your company's safety record every day in the year—making the safety program a tangible thing to every worker. Its daily presence develops pride in each employee for the part he plays to keep it flying. As a safety award, the Green Cross Flag effectively develops spirited competition between departments, making each strive for the month's best record. The Green Cross Flag is 6 feet long and 4 feet wide, of heavy duty cloth with double stitched, hemmed edges. Bright Green Cross is centered on either side. Flame proofed on request.

#### GREEN CROSS STORM FLAG

Its smaller size defies the wind and storm . . . even on rainy days you can fly it high for safety. 2 feet wide by 3 feet long, of heavy duty cloth.

#### AWARD PENNANTS

Available only to Award of Honor or Award of Merit winners, this attractive pennant is made of white, extra-heavy nylon. The safety emblem is of green nylon, anchored on both sides of the pennant. Pennant points are quilt-stitched to resist fraying due to wind whipping. 3' x 6'.

Organizations which have won the Award of Honor or the former DSS Award in previous years may order stars showing the year each award was earned. Additional stars are also available for Award or Merit pennant.



#### GREEN CROSS STICKERS

1" and 5/8" Green Cross emblems printed on heavy metal foil with gummed backs. For use on letterheads, bulletins, house organs, etc. Also available are 4" and 3" sizes on heavy paper, gummed front or back, for windows, glass doors, etc. Sold in 1,000 lots only.

#### GREEN CROSS DECALS

The Green Cross for Safety emblem decal printed in white letters on green ground, with the words "MEMBER NATIONAL SAFETY COUNCIL" underneath in green, 2" in diameter. Also available without the wording. For use on office doors or windows. Emblems are available in 2" and 3" sizes.

#### GREEN CROSS ELECTROS

An electrotpe of the safety emblem suitable for use on letterheads, booklets, and in advertising. May not be used directly or by implication to indorse or approve a commercial product. Members may use words: "Member, National Safety Council" in conjunction with this registered trademark. Mats and proofs of the emblem in 1/2", 1" and 2" sizes, free.

#### SAFETY PATCH

A travelling safety reminder. The Green Cross for Safety emblem for use on jackets, sweaters, shirts, caps, etc. Handsomely embroidered in washable green and white silk. 2 1/2".

#### AWARD DESK PENNANTS

Give your award "in plant" publicity with attractive, miniature, white silk reproductions of the Award of Honor or Award of Merit. Pennant is 3" x 6", on a black 10" staff with 1 3/4" base. Lettering in green. Available to Award winners only.

#### SAFETY DESK FLAG

Miniature silk flag—4" x 6"—on a jet black 10" staff with 1 3/4" base. The safety emblem is in emerald green on a white ground. Also effective as a banquet table decoration.

#### SAFETY LAPEL PIN

The Green Cross for Safety emblem. It is 3/8" in diameter, in polished gold finish with sparkling green and white enamels. Clutch back pin.





... Sentinals for Safety

# POSTERS

bright eye catchers that constantly remind workers of accident prevention

- Posters are aimed straight at the sources of trouble — the underlying worker attitudes and the acts that lead to accidents.

- They bring interest, color and impact into your safety program.

- they cash in on the three basic rules for good advertising — Timeliness, Repetition, and Continuity.

- they reach your entire audience many times each day at a low, low cost—driving safety messages home at the time and place to do the most good.

Posters are produced in 4 sizes: "A" size, 8 1/2" x 11 1/2"; "B" size, 17" x 23"; "C" size 25" x 38"; and the 8 sheet Jumbo Poster described on the following page. Posters may be selected as needed, or use may be made of the automatic poster service in which Council staff engineers make selections each month for 56 different types of operations. See the Directory of Occupational Safety Posters, or write the Council, for full information on the automatic poster service.

## POSTER FRAMES

Black enameled metal frames, made to fit "A" and "B" size Council posters. Frames are large enough to accommodate cardboard backing and a glass or plastic sheet in front of the poster.

## POSTER ELECTROS

You may obtain electrotypes of any poster illustrated in one color in the poster directory or in the NATIONAL SAFETY NEWS. Order by poster number. 1 7/8" x 2 3/4".

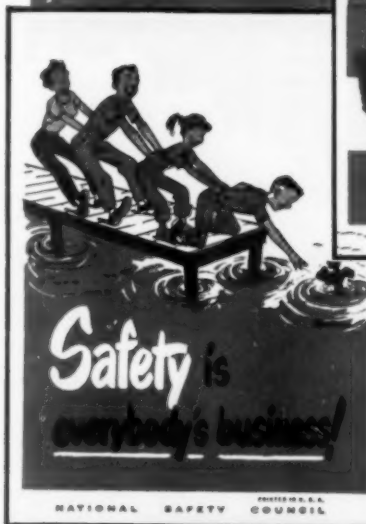
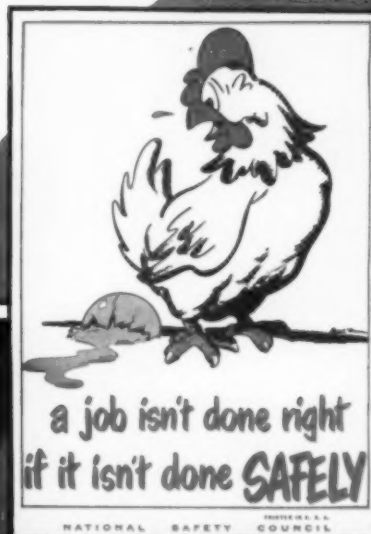
## PAYROLL ENCLOSURES

Miniature black and white reproductions of safety posters. Select 12 different posters from those shown in one color in the poster directory or in NATIONAL SAFETY NEWS.

Enclosures are printed 12 to a sheet; then cut to 1 3/4" x 2 1/2" size. Minimum order—1200 enclosures (100 sheets). Quantities of each of the miniatures selected must be identical. When more than one group of 12 are ordered, each group of 12 is priced as an individual order. See Directory of Occupational Safety Posters for details.

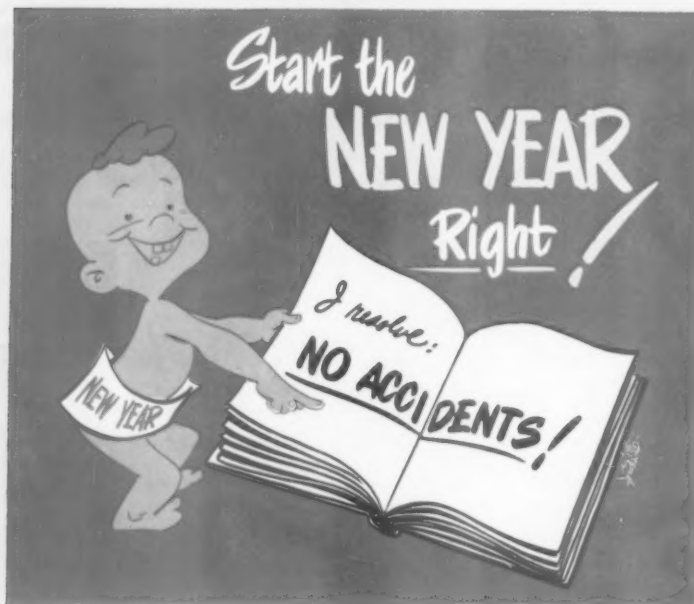
## DIRECTORY OF OCCUPATIONAL SAFETY POSTERS

Illustrates 756 posters in miniature, covering safety, fire prevention and health available from the Council. Classified and indexed for easy reference.



# BIG.....

colorful eye catchers that  
shout SAFETY to each passer-by



## JUMBO POSTERS

So big they can't be missed — so colorful they demand attention! Anyone passing your Jumbo Poster board just can't help absorbing its message of safety. 11 feet 8 inches wide by 9 feet 11 inches high, Jumbo Posters come in 8 sheets — easy to put up. Ink and paper are weather resistant for a minimum of 30 days.

A subscription brings you 12 posters — a timely, forceful message for each month of the year. Plans for erecting an attractive Jumbo Poster display board will be sent on request. See page 2 for prices.

## SAFETY BANNERS

A practical way to put safety on display inside and outside your plant. These big 3½ by 10 foot banners, printed in vivid, full color, can be erected and re-located with ease. Of heavy cloth, they can be used over and over — spotted throughout your work area and at

all approaches to and from your plant. Indoor style has eight metal grommets for easy hanging. Outdoor style, on extra-heavy cloth, has air vent flaps and ropes firmly stitched into top and bottom. Both styles, with same design, are available on subscription. See Page 2 for prices.



## 3 causes of accidents





#### Enameled NO-ACCIDENT AWARD PINS\*

An outstanding design bearing the National Safety Council name. The red, green and white jewelers glazing enamels are fused, flint-hard, at high temperatures, then stoned and polished to sparkle like a gem. All lettering and outlining finished in Rose Gold. Pins showing individual years, from 1 to 40, are stocked with nickel-silver joint, pin and safety catch. This award available on award incentive items.

#### Personalized NO-ACCIDENT AWARD PINS\*

This style permits you to have your own set of award pins at a fraction of the usual cost. Your company name will appear in gold letters against a green glazed enamel background. The gold shield bears black debossed numerals of your choice, from 1 to 40. These pins are of the same basic design and quality as the pins described above. If you wish, however, you may substitute either a clutch-pin or screw-post fastening (at reduced prices) for the pin and safety catch. \$25.00 die service charge on your original order. Personalized awards also may be ordered affixed to award incentive items.

#### Metal NO-ACCIDENT AWARD BUTTONS\*

These are the Council's economy awards—widely used throughout industry for over 20 years. The legend is embossed in jewelers bronze and the Green Cross is color filled. All years are stocked, from 1 to 40, with screw-post fastenings only. BRONZE—1, 2, 3, and 4-year awards. SILVER PLATE—5, 6, 7, 8, and 9-year awards. GOLD PLATE—all years from 10 to 40.

#### \* NOTE:

Award pins and buttons bearing the National Safety Council name are sold only to Council members and government agencies. In ordering, please submit brief description of the plan for use, including the basis for determining who will receive awards. These awards may not be used as driver awards. Write for information on the National Safety Council Safe Driver Award.

#### MERITORIOUS SERVICE AWARDS

Oval Pin in hard fired red, white and green jeweler's enamels with polished gold lettering, encircled by gold laurel wreath. The pin illustrated is carried in stock. Also available are pins inscribed "Past Safety Committee Chairman", and "Past Safety Committee Member". Pins can be made with your company name in outer band or another legend in center.

#### PERSONALIZED COMMITTEE BADGE

A handsome service emblem in glittering green and white gem-like hard-fired enamel. The top and bottom panels can be die struck with any title or company name for an additional die charge of \$20.00 per panel (\$40.00 for both panels—die charges will not be repeated on subsequent orders). No charge is made for use of stock "COMMITTEE" die in top panel.

#### COMMITTEE BADGE

Of the same high quality finish as the badge above. The outline and lettering has a highly polished gold finish and the entire badge is protective coated. Joint, pin and safety catch are nickel-silver. 1" diameter.



#### AWARD OF HONOR EMBLEMS

Available only to organizations having received the Council's Award of Honor. A truly striking design; gold plated eagle surmounting enameled Green Cross. Legends at top and bottom, in gold against enameled deep blue background. This emblem is also available in heavy metal foil for use on the plastic pocket pieces shown on page 52.



#### AWARD OF MERIT EMBLEMS

Available only to organizations having received the Council's Award of Merit. Same design as Award of Honor emblem, but with legends in gold against scarlet background. Also available in heavy metal foil on plastic pocket pieces.



#### COMMENDATION EMBLEM

Available only to organizations having received the Council's Certificate of Commendation. Same design as Award of Honor emblem, but with legends in gold against enameled white background. Also available in heavy metal foil on plastic pocket pieces.



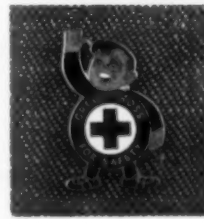
#### INDUSTRY SAFETY CONTEST WINNER EMBLEM

Available only to sectional winners of the Council's Industry Safety Contest. Gold plated eagle surmounting Green Cross; legends in gold against enameled green background. Emblems with legends for first, second, and third place winners are available.



#### FLEET SAFETY CONTEST WINNER EMBLEM

Available only to winners of the National Fleet Safety Contest. Legends in gold against enameled blue background, available for first, second and third place winners.



#### SAMMY SAFETY PIN

A brand new pin featuring the well known Sammy Safety. Available to any organization as a lapel pin, or affixed to the cuff links and tie bar shown on page 53. May also be ordered affixed to other items of jewelry, lighters, etc. Polished gold finish with green, white, blue, brown and flesh-color enamels.



#### SAFETY LAPEL PIN

The Green Cross for Safety emblem, 3/8" in diameter. Polished gold finish with sparkling green and white enamels. Clutch back pin.

## Safety Incentives



### PLASTIC POCKET PIECES

handsome and useful, these pocket pieces are ideal gifts . . . offering a look of quality at a low price. Made of the finest virgin vinyl, they perfectly simulate the rich, tri-tone warmth of fine calfskin. Available with selected safety emblems.

#### A. Man's Deluxe Wallet

A useful and highly desirable award is this handsome tri-tone, leather-like wallet. Two currency pockets, plus a pass case with 4 clear plastic card envelopes for identification cards. Retail price, \$1.25 plus 10% F.E.T.



#### B. Women's Deluxe Billfold

Smartly styled of high quality vinyl plastic that looks just like leather, and in the favorite of feminine colors —bright red. Has a removable pass case with 4 clear plastic card envelopes, divided bill compartment and coin purse. Retail price, \$1.35 plus 10% F.E.T.



#### C. Pocket Memo

Another handsome — and handy — gift item. Memo case contains 3 pockets for cards and notes. Memo pad with safety cartoon on its cover. 3" x 5" in size. Retail price, \$.95 plus 10% F.E.T.

A full line of pocket pieces with green cross emblems, is also available in real leather. Write for information.

#### D. Key Case

Always a useful and attractive gift for your award winners. Space for 6 keys. 2 1/4" x 4" size. Retail price, \$.95 plus 10% F.E.T.

#### E. Pocket Secretary

A practical and low priced award. Has 3 pocket for cards, notes, or currency. Generous note pad has safety cartoon on its cover. 4" x 7". Retail price, \$1.15 plus 10% F.E.T.



#### A. The Honor Guard

A trimly good-looking pencil which bears the Green Cross for Safety on its distinctive military clip. Plastic cap and barrel, chrome clip, point and trim. Stock pencils are available in green and ivory, imprinted with the slogan, "IT'S NOT THE RIGHT WAY IF IT ISN'T SAFE". Thin or standard lead models. Packed in ivory colored tuck-end box. The Honor Guard is unconditionally guaranteed for life.

#### B. The Ambassador

An extremely handsome writing tool. Lustrous black plastic barrel, chrome tip and engine turned cap are enhanced by the green and white Green Cross for Safety. Thin or standard lead models. The Ambassador is unconditionally guaranteed for life. In handsome gift box protected by an outer, cardboard sleeve.

These automatic pencils may be imprinted with your company name or a safety slogan of your choice. See Service Guide 9.1 for details and for Member Prices. Non-members add 25% to prices.

## SAFETY AWARD JEWELRY

any of these high in quality, low in cost items will be received with pleasure, worn with pride by the men and women who win them. These are perfect gifts to keep workers reminded of safety on the job and away from it.

### A. Award Disk Key Chain

A polished chrome clasp and satin chrome disk that sets off the Green Cross or Award emblem with simple dignity. Built to stand the steady abuse of pocket wear, too. In gift box and protective sleeve. Retail price, \$1.75.

### B. Gold Disk Bracelet

For the ladies, this attractive disk and chain of polished heavy gold plate, has plenty of eye-appeal. In gift box protected by chipboard sleeve. Retail price, \$1.80.

### D. Cuff Links

The simplicity of the plain gold rectangle sets off the Green Cross in striking style. Retail price, \$2.00.

### E. Tie Clasp

With the modern 'alligator' grip that holds tie firmly and prevents wrinkling. Designed to make the most of the rich look of precious metal. Retail price, \$1.50.

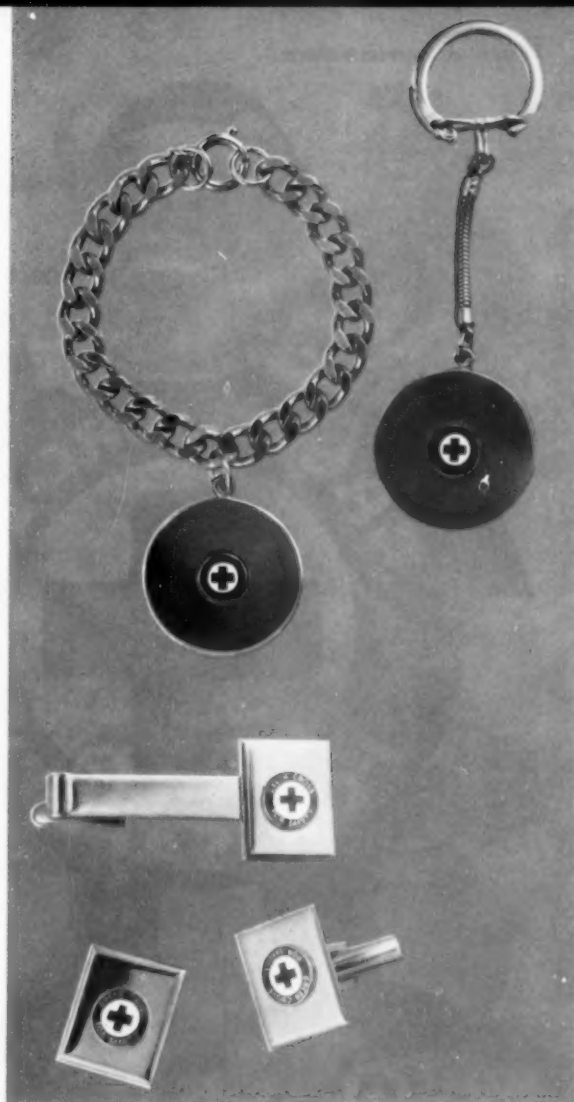


### Park Windproof Lighter

Sturdy and compact...and good-looking as well. Despite its low, low cost, it has features you would expect to find only in much higher priced lighters. Highly polished chrome finish. Unconditionally guaranteed. Available with 1/4" emblem and slogan (shown) or with 3/8" emblem without slogan. Gift boxed. Retail price, \$2.50.

### Pen Set

Black and gold marble base, 3" x 2 1/2". Swiveling socket holds pen at any angle. Equipped with your choice of fountain or ball point pen. Fountain pen supplied with extra point — ball point pen takes standard refill cartridge. Gift boxed. Retail price, \$4.95.



### Safety Contest Trophy

An attractive award plaque to reward the best safety record in inter-department or inter-organization contests. Solid bronze casting. 6" x 7 1/2" on an 8" x 10 1/2" walnut plaque. Space for engraving inscription. (Sold only to Council Members and U. S. Government Installations.)





# Sammy Safety!

**the dynamic,  
animated emblem  
of safety**

*New!*

## **3-D SAMMY SAFETY**

This life size three-dimensional, three foot high figure of Sammy was the star of the show at the 1955 National Safety Congress. Molded of sturdy composition board and painted to life-like perfection he's a real attention getter. He excites the interest of every passer by, as he directs their attention to safety exhibits, bulletins or signs. There are two models of this almost-alive Sammy available, now—with and without animation. The animated figure raises and lowers its arm, pointing with eye catching emphasis. And watch for the announcement of the special *talking* 3-D Sammy. Equipped with a recorded tape, he'll repeat a short safety slogan of your choice.

Use the 3-D Sammy to put personality into your safety program. He'll be the talk of the plant when he goes to work for you.

The need for more showmanship to sell safety and safety organizations has become increasingly evident. Safety must compete for attention and interest, and the competition is getting tougher all the time. As "point-of-purchase" advertising material has increased in quality and quantity, safety messages have often suffered by direct or indirect comparison.

Sammy Safety, the Green Cross Kid, will help add the touch of razzle-dazzle which will attract proper attention to a serious safety message. By animating and personalizing the safety emblem Sammy also carries out a well-tested advertising principle—he'll help win quick recognition and emotional attachment for the Green Cross and for the safety movement which it emblemizes.

The advertising consultants and safety professionals who helped create the little fellow think SAMMY is a "natural"—exactly the gimmick that's needed to help put across ideas, direct attention to news, and whet the interest of passive observers in safety exhibits, bulletins and signs.

Specifications: All flat models are in full-color as shown, printed on 60-pound coated stock, varnished, and mounted on .065 cardboard. All have substantial, self-locking easels. 3-D models are in color as shown.





**Model "B"**  
9 inches high

**Model "E"**  
18 inches high

**Model "C"**  
9 inches high

**Model "G"**  
24 inches high



**Model "D"**  
9 inches high



**Model "A"**  
9 inches high



**Model "D-1"**  
9 inches high  
(without hat)

**Model "F"**  
18 inches high  
(with removable  
hat)



**MODEL "H"** — overall dimensions 18 inches by 23 inches. Slots cut in fence will accommodate posters or placards up to 8½ inches by 11½ inches. Punch-out holes will hold standard 4 inches by 9 inches or 4 inches by 6 inches pamphlet racks of the type normally used with perforated hardboard panels. Other items or materials may be mounted on the fence with paste or staples.

**MODEL "I"** — same as above, except right hand motorized to give pointing action. The simple trouble-free motor will normally operate several weeks on the standard dry cell included. Complete instructions are furnished.

The models are pre-packaged in kits to reduce packaging costs and facilitate handling. Kit packages cannot be broken. The kit numbers and their contents are:

Kit	
1—Five each of models A and B, per kit.....	\$5.25
2—Five each of models C and D, per kit.....	5.25
3—Five each of model E, per kit.....	5.25
4—Five each of model F, per kit.....	5.25
5—Three each of model G, per kit.....	5.25
6—Two each of model H, (without motion) per kit....	5.25
7—One each of model I (with motion) per kit.....	6.50
8—One each of models A to H, per kit.....	7.75
9—Ten each of model D-1, per kit.....	5.25
10—Blank Easels, each.....	3.75



#### PRICES \* MEMBER AND NON-MEMBER

	1-9	10-99	100 or more
1—Five each of models A and B, per kit.....	\$5.25	\$4.25	\$3.95
2—Five each of models C and D, per kit.....	5.25	4.25	3.95
3—Five each of model E, per kit.....	5.25	4.25	3.95
4—Five each of model F, per kit.....	5.25	4.25	3.95
5—Three each of model G, per kit.....	5.25	4.25	3.95
6—Two each of model H, (without motion) per kit....	5.25	4.25	3.95
7—One each of model I (with motion) per kit.....	6.50	5.50	5.15
8—One each of models A to H, per kit.....	7.75	6.50	6.00
9—Ten each of model D-1, per kit.....	5.25	4.25	3.95
10—Blank Easels, each.....	3.75	2.75	2.50

## MEMBER PRICES

\* Items marked with an asterisk (\*), indicate the same price to members and to non-members. Government installations and non-members write for prices on all other items.

Item No.		1 to 9	10 to 99	100 to 999	1,000 to 4,999	5,000 to 9,999	10,000 to 19,999	20,000 or more	Page
129.29	Accident Analysis Charts, pads of 50, ea.	\$ 1.05	\$ 1.00	\$ .90	\$ .85	—	—	—	8
021.5	Accident Facts,* ea.	1.00	.75	.70	.65	—	—	—	9
191.10	Accident Preventers, any selection, ea.	.10	.05	.025	.02	.019	.018	.017	—
121.41	Accident Prevention Manual, ea.	11.75	11.00	10.50	—	—	—	—	3
	Non-Member prices, ea.	13.50	12.75	12.00	—	—	—	—	
125.5	Accident Rates Pamphlets, ea.	.35	.35	.29	.29	—	—	—	9
	Accident Record Forms, Industrial								
129.21	IS-1A, ea.	.06	.023	.017	.015	—	—	—	9
129.23	IS-3, ea.	.06	.023	.017	.015	—	—	—	9
129.25	IS-5A, ea.	.06	.023	.017	.015	—	—	—	9
129.26	IS-6 (pads of 100), ea.	.35	.35	.35	.35	—	—	—	9
129.27	IS-7, ea.	.06	.023	.017	.015	—	—	—	9
129.28	IS-8, ea.	.06	.023	.017	.015	—	—	—	9
	Accident Record Forms, Motor Transportation								
229.31	Veh-1, ea.	.08	.023	.017	.015	—	—	—	9
229.32	Veh-2, ea.	.12	.08	.044	.044	—	—	—	9
229.33	Veh-3, ea.	.08	.035	.029	.023	—	—	—	9
229.34	Veh-4, ea.	.08	.023	.017	.015	—	—	—	9
229.35	Veh-5, ea.	.12	.08	.044	.044	—	—	—	9
229.36	Veh-6, ea.	.08	.023	.017	.015	—	—	—	9
229.37	Veh-10, ea.	.23	.17	.138	.12	—	—	—	9
229.38	Veh-12, ea.	.08	.023	.017	.015	—	—	—	9
001.10	Administrative Unit—AA-1	23.00							13
002.20	Administrative Unit—A-1	17.50							13
002.30	Administrative Unit—B-1	14.00							13
002.40	Administrative Unit—C-1	8.50							13
003.20	Administrative Unit—A-2	18.00							13
003.30	Administrative Unit—B-2	11.00							13
003.40	Administrative Unit—C-2	7.00							13
002.31	Administrative Unit—B-11	14.00							13
399.03	Andy Larkin*, ea.	.20	.10	.06	.05	.047	.045	.043	33
192.03	Aren't People Funny, ea.	.12	.07	.06	.045	.04	.035	.03	31
044.52	Award Desk Pennant, Honor or Merit, ea.	1.00	.70	.60	—	—	—	—	48
195.66	Be Fire Wise, ea.	.17	.12	.08	.06	.05	.045	.04	29
294.07	Be Your Own Traffic Judge*, ea.	.25	.12	.09	.08	—	—	—	33
022.15	Congress Transactions Set, ea.	6.90	6.30	5.70	5.70	—	—	—	8
262.01	Dash Card Sets—Subscriptions								
	(24 Issues), ea.	.69	.58	.44	.40	—	—	—	56
262.24	Dash Stickers, set of 12, ea.	.75	.60	.50	.47	—	—	—	56
123.04	Data Sheets, any selection, ea.	.17	.13	.08	.07	—	—	—	4-5
123.01	Data Sheets, Set with Binders, ea.	19.50	18.00	17.50	17.50	—	—	—	4
123.05	Data Sheet Binders, ea.	3.00	3.00	3.00	3.00	—	—	—	
192.06	Deadly Ideas, ea.	.20	.10	.08	.06	.055	.05	.045	31
196.00	Decalcomanias, any selection, ea.	.12	.07	.058	.046	—	—	—	36
294.01	Defensive Driving, Bus, ea.	.17	.10	.08	.058	.05	—	—	35
294.02	Defensive Driving, Truck, ea.	.17	.10	.08	.058	.05	—	—	35
599.34	Dennis The Menace on Safety*, ea.	.20	.10	.06	.05	.047	.045	.043	34
124.04	Detail Sheets, any selection, ea.	.12	.09	.08	.07	—	—	—	6
124.01	Detail Sheets, Current Set, Including								
	Binder, ea.	12.20	9.50	9.00	9.00	—	—	—	6
195.73	Don't Make An Ash of Yourself, ea.	.17	.12	.08	.06	.05	.045	.04	30
195.25	Down Time, ea.	.12	.07	.06	.045	.04	.035	.03	31
	Employee Publications Service								24
195.63	Fall Guy, The, ea.	.12	.07	.06	.045	.04	.035	.03	28
611.01	Farm Safety Review*, Subscription								
	(12 issues), ea.	1.00	—	—	—	—	—	—	12

### FILMS—

Sale Item Number	Rental and Preview Item Number		Single Copy	2 to 9	10 or more	Rental or Preview	
171.85	172.85	All Out For Safety, 16mm, black and white, ea.	\$58.00	\$55.00	\$52.00	\$10.00	19
171.38	172.38	An Accident Happens To Sam, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	42
171.39	172.39	An Accident Happens To Sam, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	42
171.82	—	Bar It Down, 35mm, color, silent, ea.	14.50	13.70	12.90	†	46
171.60	172.60	Blasting Safely in Mines, 35mm, black and white, ea.	14.50	13.70	12.90	5.00††	46
141.01	149.01	Brain Beats Brawn, 35mm, black and white, ea.	14.50	13.70	12.90	5.00	21
171.62	172.62	Building Construction Safety, 35mm, black and white, ea.	14.50	13.70	12.90	5.00††	46

Sale Item Number	Rental and Preview Item Number		Single Copy	2 to 9	10 or more	Rental or Preview	Page
143.01	149.03	Butterflies In Your Stomach, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	22
145.12	149.10	Call 'Em On The Carpet, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	19
145.02	149.09	Call 'Em On The Carpet, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	19
141.02	149.01	Cause and Cure, 35mm, black and white, ea.	14.50	13.70	12.90	5.00	43
171.05	172.05	Cause For Alarm, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	44
171.06	172.06	Cause For Alarm, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	44
278.18	278.68	Champ Becomes Deaf & Blind, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	47
278.24	278.74	Champ Becomes Deaf & Blind, 16mm, color, ea.	95.00	91.00	87.00	20.00	47
171.63	172.63	Construction Equipment Safety, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	45
171.49	172.49	Decide To Be Safe, 35mm, black and white, ea.	14.50	13.70	12.90	5.00	42
171.55	172.55	Decide To Be Safe, 16mm, black and white, ea.	45.00	43.00	42.00	10.00	42
278.01	278.51	Defensive Driving, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	46
141.03	149.01	Doctor's Orders, 35mm, black and white, ea.	14.50	13.70	12.90	5.00	21
171.88	172.88	Down At The Office, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	41
171.07	172.07	Easy On The Eyes, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	43
171.08	172.08	Easy On The Eyes, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	43
142.02	149.02	Everybody's Different, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	20
171.09	172.09	Fall Guy, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	44
171.66	172.66	Falling Ground, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	46
171.10	172.10	Fifteen Minutes To Go, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	43
171.11	172.11	Fire, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	44
141.05	149.01	Follow the Leader, 35mm, black and white, ea.	14.50	13.70	12.90	5.00	21
171.12	172.12	For Safety's Sake, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	44
145.11	149.10	Fragile—Handle Feelings With Care, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	19
145.01	149.09	Fragile—Handle Feelings With Care, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	19
171.13	172.13	Freight Handling Safety, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	44
171.14	172.14	Freight Handling Safety, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	44
171.86	172.86	Friendly Machines, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	41
171.87	172.87	Friendly Machines, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	41
171.48	172.48	Get A Grip On Yourself, 35mm, black and white, ea.	14.50	13.70	12.90	5.00	42
171.54	172.54	Get A Grip On Yourself, 16mm, black and white, ea.	45.00	43.00	42.00	10.00	42
171.15	172.15	Giant Hands of Industry, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	45
144.01	149.04	Gray Day For O'Grady, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	19
144.02	149.05	Gray Day For O'Grady, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	19
171.16	172.16	Grime Doesn't Pay, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	44
141.04	149.01	Guard Duty, 35mm, black and white, ea.	14.50	13.70	12.90	5.00	21
171.17	172.17	Handle With Care, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	44
142.00	149.02	Human Factors in Safety, Set of 6 films, 35mm, black and white, set ea.	115.00	109.00	103.00	7.50††	20
278.02	278.52	If It Happens, 35mm, black and white	20.50	19.50	18.40	5.00	46
171.83	172.83	If You Took Your Family To Work With You, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	42
171.84	172.84	If You Took Your Family To Work With You, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	42
171.18	—	Invisible Red Ink, 35mm, black and white, ea.	9.00	8.50	8.00	free loan	19
145.13	149.10	It's An Order, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	19
145.03	149.09	It's An Order, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	19
171.67	172.67	Jackhammer Safety, 35mm, black and white, ea.	14.50	13.70	12.90	5.00††	46
171.68	172.68	Keep 'Em Rolling, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	45
171.19	172.19	Keep It Clean, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	43
143.02	149.03	Key To Good Speaking, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	22
171.69	172.69	Laboratory Glassware, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	45
171.20	172.20	Learn and Live, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	43
171.47	172.47	Let Habit Help, 35mm, black and white, ea.	14.50	13.70	12.90	5.00	42
171.53	172.53	Let Habit Help, 16mm, black and white, ea.	45.00	43.00	42.00	10.00	42
171.70	172.70	Men and Motive Power, 35mm, black and white, ea.	40.00	38.00	37.00	5.00	45
171.71	172.71	Men of Maintenance, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	45
171.72	172.72	Minute Men, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	45
171.21	172.21	My Eye Deal, 35mm, color, ea.	32.50	31.00	30.00	5.00	44
278.15	278.65	Ninety Day Flash, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	47
278.21	278.71	Ninety Day Flash, 16mm, color, ea.	95.00	91.00	87.00	20.00	47
171.22	172.22	No Laughing Matter, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	43
143.03	149.03	Now You're Talking, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	22
143.04	149.03	On Your Feet, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	22
171.23	172.23	Open For Infection, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	44
171.80	172.80	Operating Heavy Duty Trucks Safely, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	45
142.01	149.02	People Are All Alike, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	20
171.44	172.44	Personal Side of Safety, 35mm, black and white, set of 5 films, set ea.	70.00	65.00	63.00	7.50††	42
171.50	172.50	Personal Side of Safety, 16mm, black and white, set of 5 films, set ea.	210.00	200.00	195.00	10.00††	42
144.03	149.06	Pick Your Safety Target, 35mm, color, ea.	32.50	31.00	30.00	5.00	19
144.05	149.08	Pick Your Safety Target, 16mm, color, ea.	95.00	91.00	87.00	20.00	19
144.04	149.07	Pick Your Safety Target, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	19
278.03	278.53	Pilots of The Highway, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	46

Sale Item Number	Rental and Preview Item Number		Single Copy	2 to 9	10 or more	Rental or Preview	Page
143.05	149.03	Power of Speech, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	22
141.06	149.01	Principles and Interest, 35mm, black and white, ea.	14.50	13.70	12.90	5.00	21
141.07	149.01	Production With Safety, 35mm, black and white, ea.	14.50	13.70	12.90	5.00	21
278.14	278.64	Professional Safe Driving Series, 16mm, black & white, set of 5 films, set ea.	285.00	275.00	270.00	10.00††	47
278.20	278.70	Professional Safe Driving Series, 16mm, color, set of 5 films, set ea.	425.00	410.00	400.00	20.00††	47
278.04	278.54	P. U. D. Driver Wins Again, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	46
141.08	149.01	Right Dress, 35mm, black and white, ea.	14.50	13.70	12.90	5.00	21
143.06	149.03	Ring The Bell, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	22
171.24	172.24	Rules For Tools, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	44
171.25	172.25	Safe All Around, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	44
171.43	172.43	Safe As You Make It, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	44
171.26	172.26	Safe Handling of Materials, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	43
171.74	172.74	Safe Haulage in Coal Mines, 35mm, black and white, ea.	14.50	13.70	12.90	5.00††	46
171.27	172.27	Safe In Hand, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	43
171.75	172.75	Safely We Work, 35mm, black and white, ea.	9.00	8.50	8.00	free loan	45
142.03	149.02	Safety Case Histories, 35mm, black and white, ea.	32.50	31.00	30.00	5.00	20
141.09	149.01	Safety Is In Order, 35mm, black and white, ea.	14.50	13.70	12.90	5.00	21
141.00	149.01	Safety Management For Foremen, set of 10 films, 35mm, black and white, set ea.	115.00	109.00	103.00	7.50††	21
171.45	172.45	Safety Record, 35mm, black and white, ea.	14.50	13.70	12.90	5.00	42
171.51	172.51	Safety Record, 16mm, black and white, ea.					42
171.76	172.76	Sawmill Safety, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	45
142.04	149.02	Secret of Supervision, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	20
278.16	278.66	Skill Is Your Business, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	47
278.22	278.72	Skill Is Your Business, 16mm, color, ea.	95.00	91.00	87.00	20.00	47
278.11	278.61	Smooth Operation, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	46
278.12	278.62	Smooth Operation, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	46
171.90	172.90	So You're New Around Here, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	41
171.91	172.91	So You're New Around Here, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	41
143.00	149.03	Speaking of Safety, set of 6 films, 35mm, black and white, set ea.	115.00	109.00	103.00	7.50††	22
141.10	149.01	Stop, Look and Listen, 35mm, black and white, ea.	14.50	13.70	12.90	5.00	21
171.29	172.29	Stop The Fire Thief, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	43
171.30	172.30	Stop The Fire Thief, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	43
145.00	149.09	Supervising For Safety, set of 3 films, 16mm, black and white, set ea.	160.00	153.00	148.00	10.00††	19
145.10	149.10	Supervising For Safety, set of 3 films, 35mm, black and white, set ea.	58.00	55.00	52.00	7.50††	19
278.17	278.67	Take A Look At The Odds, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	47
278.23	278.73	Take A Look At The Odds, 16mm, color, ea.	95.00	91.00	87.00	20.00	47
171.57	172.57	Take Time To Live, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	42
171.56	172.56	Take Time To Live, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	42
142.05	149.02	Teaching Safety On The Job, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	20
142.06	149.02	Teamwork For Safety, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	20
		To Your Health, 35mm, black and white, ea.	Write for Prices				46
171.46	172.46	Two Steps To Safety, 35mm, black and white, ea.	14.50	13.70	12.90	5.00	42
171.52	172.52	Two Steps To Safety, 16mm, black and white, ea.	45.00	43.00	42.00	10.00	42
171.89	172.89	Vacation Safety, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	41
278.19	278.69	Watch Your Handicap, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	47
278.25	278.75	Watch Your Handicap, 16mm, color, ea.	95.00	91.00	87.00	20.00	47
171.35	172.35	What's Your Safety I. Q.?, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	43
171.36	172.36	What's Your Safety I. Q.?, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	43
171.37	172.37	Woodworking Machines, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	45
171.00	172.00	Worker Film Training Series, 35mm, black and white, set of 10 films.	178.00	172.00	167.00	10.00††	43
171.01		Any 9 films in series	167.00				43
171.01		Any 8 films in series	149.00				43
171.01		Any 7 films in series	130.00				43
171.01		Any 6 films in series	115.00				43
171.01		Any 5 films in series	98.00				43
171.79	172.79	Woven With Safety, 35mm, black and white, ea.	20.50	19.50	18.40	5.00	45
171.40	172.40	You Can Take It With You, 35mm, color, ea.	32.50	31.00	30.00	5.00	42
171.41	172.41	You Can Take It With You, 16mm, black and white, ea.	58.00	55.00	52.00	10.00	42
171.42	172.42	You Can Take It With You, 16mm, color, ea.	95.00	91.00	87.00	20.00	42

† Not available on rental or preview basis—purchase only.

†† Not available on rental basis—purchase or preview only.

Preview and rental rates are per week, or fraction thereof. User pays return shipping charges.

Item No.		1 to 9	10 to 99	100 to 999	1,000 to 4,999	5,000 to 9,999	10,000 to 19,999	20,000 or more	
195.01	First Aid Reminders, set of 8, ea.	.33	.24	.16	.12	—	—	—	32
195.04	First Aid Reminders, any selection, ea.	.07	.05	.035	.026	—	—	—	32
195.26	Fit As A Fiddle®, ea.	.20	.10	.08	.06	.055	.05	.045	31
221.22	Fleet Safety Manual, Individual Parts, ea.	8.50	8.00	8.00	8.00	—	—	—	11
221.22	Fleet Safety Manual, Ind. Parts, ea.	.85	.75	.70	.63	—	—	—	11
229.10	Fleet Safety Memos,® ea.	.17							9

(Write for prices on larger quantities)



Item No.	1 to 9	10 to 99	100 to 999	1,000 to 4,999	5,000 to 9,999	10,000 to 19,999	20,000 or more	Page
152.02 Foremen's 5 Minute Safety Talks— Book I, ea.	1.70	1.40	1.10	1.00	—	—	—	18
152.03 Foremen's 5 Minute Safety Talks— Book II, ea.	1.70	1.40	1.10	1.00	—	—	—	18
152.04 Foremen's 5 Minute Safety Talks— Book III, ea.	1.70	1.40	1.10	1.00	—	—	—	18
152.05 Foremen's 5 Minute Safety Talks— Book IV, ea.	1.70	1.40	1.10	1.00	—	—	—	18
152.06 Foremen's 5 Minute Safety Talks— Book V, ea.	1.70	1.40	1.10	1.00	—	—	—	18
152.07 Foremen's 5 Minute Safety Talks— Book VI, ea.	1.70	1.40	1.10	1.00	—	—	—	18
292.20 For Experts Only, ea.	.23	.21	.17	.15	—	—	—	35
159.11 Graphic Arts Industry Safety Study Course, ea.	17.50	—	—	—	—	—	—	9
033.01 Green Cross Electros*								48
1/2", 5/8", ea.	.75	.69	.69	.69	—	—	—	
3/4", 1", ea.	1.38	1.20	1.20	1.20	—	—	—	
1 1/2", ea.	2.00	1.90	1.90	1.90	—	—	—	
031.01 Green Cross Flag*, ea.	9.75	9.25	8.75	8.75	—	—	—	48
196.00 Green Cross Decals, ea.	.12	.07	.058	.046	—	—	—	48
Green Cross Stickers*,								48
037.01 3" Paper, \$5.75 per thousand								
037.02 4" Paper, 5.75 per thousand								
037.06 3/4" Metallic Foil, \$3.75 per thousand								
037.05 1" Metallic Foil, \$3.75 per thousand								
044.41 Green Cross Safety Patch*, ea.	.46	.30	.25	.22	—	—	—	48
031.31 Green Cross Storm Flag*, ea.	4.25	3.75	3.50	3.50	—	—	—	48
129.02 Handbook of Accident Prevention, ea.	1.50	1.25	1.00	.90	—	—	—	16
194.34 Have A Good Time, ea.	.12	.07	.06	.045	.04	.037	.035	34
194.29 Have A Holiday, ea.	.15	.05	.025	.015	.014	.013	.012	34
192.10 Heads You Win, ea.	.20	.10	.08	.06	.055	.05	.045	27
195.62 Heave Ho! ea.	.12	.07	.06	.045	.04	.035	.03	29
399.04 Highway Zoo*, ea.	.10	.07	.05	.04	.035	.032	.03	33
511.01 Home Safety Review*, Subscription (10 issues), ea.	2.00	1.85	1.70	—	—	—	—	12
129.55 Hospital Safety Manual, ea.	1 to 20, 2.00; 11 to 50, 1.70; 51 to 100, 1.60; 101 or more, 1.50							11
X10.00 Hospital Safety Service*, ea.	10.00	—	—	—	—	—	—	9
294.05 How To Be A Smooth Operator, ea.	.17	.10	.08	.058	—	—	—	35
029.02 How To Make The Safety Speech*, ea.	.69	.63	.58	.58	—	—	—	16
195.68 How To Prevent Falls, ea.	.10	.06	.045	.035	.03	.028	.026	28
129.86 How To Start A Safety Program*, ea.	.75	.60	.50	.40	—	—	—	10
INCENTIVES—								
050.30 Bracelet, Gold Disk, ea.	1.44	1.18	1.15	1.14	—	—	—	53
(Add 10% Federal Excise Tax)								
049.14 Cuff Links, ea.	1.55	1.43	1.40	1.39	—	—	—	53
(Add 10% Federal Excise Tax) (Gift Box \$ .10 extra)								
044.21 Committee Badge, ea.	.75	.60	.55	.53	—	—	—	51
044.22 Personalized, ea. (Plus die charges), ea.	—	.65	.60	.55	—	—	—	51
048.10 Key Case, ea.	.75	.56	.53	.52	—	—	—	52
050.10 Key Chain, Disk, ea.	1.54	1.27	1.24	1.23	—	—	—	53
(Add 10% Federal Excise Tax)								
Lighter, Park Windproof								
050.96 With 1/4" Emblem, ea.	2.18	1.89	1.86	1.85	—	—	—	53
050.90 With 3/8" Emblem, ea.	2.29	2.00	1.97	1.96	—	—	—	53
047.30 Men's Deluxe Wallet, ea.	1.05	.87	.84	.83	—	—	—	52
(Add 10% Federal Excise Tax)								
044.25 Meritorious Service Award Pins, ea.	.70	.58	.55	.54	—	—	—	51
044.14 No-Accident Award Pins, enamel, ea.	.65	.53	.50	.49	—	—	—	51
044.15 No-Accident Award Pins, Personalized, ea.	—	.53	.50	.49	—	—	—	51
No-Accident Award Buttons, Metal								
044.11 Bronze (1 to 4 years), ea.	.45	.31	.28	.27	—	—	—	51
044.12 Silver Plated (5 to 9 years), ea.	.46	.32	.29	.28	—	—	—	51
044.13 Gold Plated (10 to 40 years), ea.	.47	.33	.30	.29	—	—	—	51
(Add 10% Federal Excise Tax on Silver and Gold)								
Pencils	1 to 9	10 to 49	50 to 99	100 to 249	250 to 499	500 to 999	1,000 to 2,499	
041.11 Honor Guard, ea.	1.10	1.00	.93	.85	.81	.77	.74	52
041.12 Ambassador, ea.	1.73	1.63	1.56	1.48	1.44	1.40	1.37	52
	1 to 3	4 to 9	10 to 49					
041.40 Pen Set, ea.	3.87	3.17	2.98					53

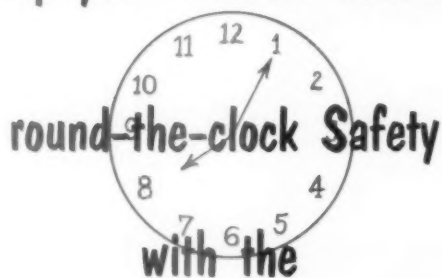
Item No.	1 to 9	10 to 99	100 to 999	1,000 to 4,999	5,000 to 9,999	10,000 to 19,999	20,000 or more	Page
048.30 Pocket Memo, ea. ....	.75	.57	.54	.53	—	—	—	52
(Add 10% Federal Excise Tax)								
047.90 Pocket Secretary, ea. ....	.95	.75	.72	.71	—	—	—	52
(Add 10% Federal Excise Tax)								
032.01 Safety Contest Trophy, ea. ....	25.00	23.00	22.00	22.00	—	—	—	53
044.01 Safety Lapel Pins*, ea. ....	.47	.35	.32	.31	—	—	—	51
044.41 Safety Patch*, ea. ....	.40	.30	.25	.22	—	—	—	48
044.02 Sammy Safety Pin*, ea. ....	.75	.63	.58	.57	—	—	—	51
051.30 Tie Clasp, ea. ....	1.11	.98	.94	.93	—	—	—	53
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047.70 Women's Deluxe Billfold. ....	1.10	.91	.88	.87	—	—	—	52
(Add 10% Federal Excise Tax)								
122.01 Industrial Safety Series Pamphlets, Set in binder, ea. ....	11.50	11.00	10.50	10.50	—	—	—	7
122.04 Industrial Safety Series Pamphlets, any selection, ea. ....	.45	.40	.35	.33	—	—	—	7
131.01 Industrial Supervisor, Subscription (12 issues), ea. ....	1.80	1.70	1.65	1.60	—	—	—	14
131.03 Industrial Supervisor, Subscription billed monthly, ea. ....	.18	.16	.145	.135	—	—	—	14
195.22 In The Pink, ea. ....	.17	.09	.07	.05	.045	.04	.035	31
399.64 It's Up To You*, ea. ....	.20	.15	.09	.08	.075	.072	—	35
399.63 It's Your Responsibility*, ea. ....	.15	.10	.06	.05	.045	.042	—	33
129.97 Jig and Fixture Design For Woodworking Safety*, ea. ....	1.75	1.50	1.20	1.10	—	—	—	10
Jumbo Posters—see Posters								50
195.61 K. O. Dirt and Disorder, ea. ....	.12	.07	.06	.045	.04	.035	.03	30
399.02 Mac Hines—Trooper*, ea. ....	.20	.10	.06	.05	.047	.045	.043	33
129.46 Manual of Accident Prevention in Construction*, ea. ....	3.00	—	—	—	—	—	—	11
195.71 Man With The Badge, The, ea. ....	.60	.45	.40	.35	—	—	—	30
029.01 National Directory of Safety Films*, ea. ....	1.00	.90	.80	.75	—	—	—	10
National Safety Calendar	Write for prices							IBC
National Safety Council Services								23
111.01 National Safety News, Subscription (12 issues), ea. ....	5.50	5.00	4.60	4.40	—	—	—	2
Non-Member price, ea. ....	7.50	6.90	6.30	6.00	—	—	—	
(Add \$1.00 for foreign, except Canada & Pan American Union)								
111.03 National Safety News, Single issues, ea. ....	1.00	.90	.85	.80	—	—	—	2
112.01 Newsletters, Subscription (12 issues), ea. ....	1.15	1.00	.85	.85	—	—	—	8
599.33 Nice Going, Pop!*, ea. ....	.12	.07	.06	.045	.04	.037	.035	34
529.30 Off-The-Job Safety Kit*, ea. ....	1.00	—	—	—	—	—	—	12
029.04 1,000 Safety Bell Ringers*, ea. ....	.35	.29	.23	.23	—	—	—	16
313.01 Operation Safety Kit*, Subscription (issued quarterly) ea. ....	13.25	11.00	11.00	—	—	—	—	12
294.06 Passenger Safety, ea. ....	.20	.12	.09	.065	—	—	—	35
198.10 Payroll Enclosures—1st 100 Sheets, ea. ....	11.50	—	—	—	—	—	—	49
Additional 100 sheets, ea. ....	1.95	—	—	—	—	—	—	
Photocscripts, any selection, ea. ....	.12	.07	.06	.045	.04	.035	.03	
193.01 A Clean Plant								30
193.03 Control of Fire								30
193.04 Dress For Safety								32
193.05 Falls								28
193.06 Freight Handling								29
193.07 Get First Aid								32
193.08 Handle With Care								29
193.09 Learn Safety								27
193.10 Machinists Hand Tools								28
193.11 Maintenance Tools								28
193.12 Prevent Fire								30
193.13 Protect Your Eyes								32
029.05 Pocket Book of Speech Formulas*, ea. ....	.60	.40	.35	.30	—	—	—	16
POSTERS—Occupational								
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182.13 Any Selection, ea. ....	.12	.08	.055	.045	.04	.035	.032	
182.13 All one poster, ea. ....	.12	.07	.05	.04	.035	.032	.029	
"B" Size Posters (17" x 23"):								49
182.23 Any selection, ea. ....	.20	.19	.16	.13	.10	.085	.075	
182.23 All one poster, ea. ....	.20	.17	.15	.12	.095	.08	.07	
"C" Size Posters (25" x 38"):								49
182.33 Any Selection, ea. ....	.50	.40	.35	.30	—	—	—	

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181.31	Annual Subscription 12 posters, ea. ....	4.00	3.50	3.00	2.50	—	—	—	
	Jumbo Posters (11" 8" x 9" 11"):								50
184.41	Annual Subscription (12 Posters), ea. ....	54.00	51.00	48.50	—	—	—	—	
184.43	Subscription, billed monthly, ea. ....	5.40	4.40	4.10	—	—	—	—	
189.01	Poster Directory*, ea. ....	.50	.40	.35	—	—	—	—	49
033.02	Poster Electros, ea. ....	3.45	3.45	3.15	3.15	—	—	—	49
034.01	Poster Frames—"A"—8 1/2" x 11 1/2"—ea. ....	1.15	1.00	.90	.90	—	—	—	49
034.02	Poster Frames—"B"—17" x 23"—ea. ....	1.70	1.40	1.15	1.15	—	—	—	49
151.04	Psychology and The Supervisor, ea. ....	.60	.40	.35	.30	—	—	—	16
151.02	Psychology of Safety in Supervision Set of 6, ea. ....	1.05	1.00	.90	.85	—	—	—	17
311.01	Public Safety Magazine*, Subscription (12 issues), ea. ....	4.00	3.80	3.45	3.45	—	—	—	12
	(Add \$.50 for foreign, except Canada and Pan American Union)								
195.72	Really Stacked, ea. ....	.12	.07	.06	.045	.04	.035	.03	29
599.61	Safe At Home*, ea. ....	.17	.09	.07	.05	.045	.04	.035	34
164.01	Safe Builder Subscription (12 issues), ea. ....	.44	.39	.29	.25	.24	.23	.22	26
164.03	Safe Builder, Subscription, (12 issues), Billed monthly, ea. ....	.05	.039	.026	.022	.021	.02	.019	26
164.03	Safe Builder, Single issues, ea. ....	.05	.039	.029	.025	.024	.023	.022	26
261.01	Safe Driver, Subscription, (12 issues), ea. ....	.70	.66	.50	.42	.40	.37	.35	26
261.03	Safe Driver, Subscription, (12 issues), ea., billed monthly ....	.07	.066	.046	.036	.034	.032	.03	26
261.03	Safe Driver, single issues, ea. ....	.07	.066	.05	.042	.04	.037	.035	26
122.04	Safe Practices Pamphlets, any selection, ea. ....	.45	.40	.35	.33	—	—	—	7
122.01	Safe Practices Pamphlets, Set in binder, ea. ....	7.50	7.00	6.50	6.50	—	—	—	7
122.05	Binder only, ea. ....	2.50	—	—	—	—	—	—	
163.01	Safe Railroader, Subscription, (12 issues), ea. ....	.44	.39	.29	.25	.24	.23	.22	26
163.03	Safe Railroader, Subscription, (12 issues), billed monthly, ea. ....	.05	.039	.026	.022	.021	.02	.019	26
163.03	Safe Railroader, Single issues, ea. ....	.05	.039	.029	.025	.024	.023	.022	26
161.01	Safe Worker, Subscription, (12 issues), ea. ....	.70	.66	.50	.42	.40	.37	.35	25
161.03	Safe Worker, Subscription, (12 issues), billed monthly, ea. ....	.07	.066	.046	.036	.034	.032	.03	25
161.03	Safe Worker, Single issues, ea. ....	.07	.066	.05	.042	.04	.037	.035	25
	Safety Banners, Subscription*, (12 issues)	1	2 to 9	10 to 49	50 or more				
188.51	Indoor, ea. ....	74.00	69.00	66.00	63.00	—	—	—	50
188.61	Outdoor, ea. ....	84.00	79.00	76.00	73.00	—	—	—	
	Safety Banners,* Subscription, (12 issues), billed monthly								
188.53	Indoor, ea. ....	7.40	6.15	5.50	5.30	—	—	—	50
188.63	Outdoor, ea. ....	8.40	7.00	6.45	6.15	—	—	—	
044.51	Safety Desk Flag*, ea. ....	1.00	.70	.60	—	—	—	—	48
		1 to 9	10 to 99	100 to 999	1,000 to 4,999	5,000 to 9,999	10,000 to 19,999	20,000 or more	
129.85	Safety Devices and Ideas, Volume I, ea. ....	1.25	1.00	.90	.85	—	—	—	10
129.88	Safety Devices and Ideas, Volume II, ea. ....	1.25	1.00	.90	.85	—	—	—	10
411.01	Safety Education Magazine*, Subscription (9 issues), ea. ....	3.30	3.00	2.60	2.50	—	—	—	12
	(Add \$.50 for foreign, except Canada and Pan American Union)								
	Safetygraphs only, any selection, ea. ....	8.00	7.60	7.25	7.00	—	—	—	37-40
174.51	How To Lift								38
174.52	Bench and Stand Grinders								38
174.53	Operating A Power Press								38
174.54	Wearing Goggles								38
174.55	Plant Housekeeping								38
174.56	Ladder Safety								38
174.57	Using Fire Extinguishers								38
174.58	Accidents Don't Happen								38
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174.67	Does Your Accident Show?								39
174.68	My Aching Back								39
174.69	Static Sparks and Flammable Liquids								39
174.70	Off-The-Job Safety								39

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174.73								40
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174.78								40
279.21								40
279.22								40
174.99	3.55	3.30	3.30	3.30	—	—	—	37-40
151.01	1.95	1.70	1.50	1.45	—	—	—	17
129.61	1.25	1.00	.90	.80	—	—	—	11
129.95	1.05	1.00	.90	.85	—	—	—	9
191.04	.05	.025	.019	.017	—	—	—	7
191.01								
Complete Set, including File Case and Guides, ea.	12.65	12.10	11.25	11.00	—	—	—	7
191.02								
Industrial Set, including File Case and Guides, ea.	8.25	7.70	7.15	6.60	—	—	—	7
192.11	.20	.10	.08	.06	.055	.05	.045	27
129.91	56.00	—	—	—	—	—	—	9
129.82								
Safety Manual For The Graphic Arts Industry*, ea.	2.50	—	—	—	—	—	—	11
129.66								
Safety Manual for Marine Oil-Fired Watertube Boilers, ea.	1.50	1.25	1.15	1.10	—	—	—	11
599.62	.10	.06	.045	.035	.03	.028	.026	34
152.01								
Safety Talks for Construction and Maintenance Foremen, ea.	1.70	1.40	1.10	1.00	—	—	—	18
952.00								
Safety Training Institute Fundamentals of Industrial Safety	85.00	—	—	—	—	—	—	8
Safety Management Techniques	90.00	—	—	—	—	—	—	
192.07	.20	.16	.12	.09	.08	.075	.07	31
Safety Zoo, ea.								
Sammy Safety Figurines* Kit:								
035.11	5.25	4.25	3.95	—	—	—	—	55
035.12	5.25	4.25	3.95	—	—	—	—	55
035.13	5.25	4.25	3.95	—	—	—	—	55
035.14	5.25	4.25	3.95	—	—	—	—	55
035.15	5.25	4.25	3.95	—	—	—	—	55
035.16	5.25	4.25	3.95	—	—	—	—	55
035.17	6.50	5.50	5.15	—	—	—	—	55
035.18	7.75	6.50	6.00	—	—	—	—	55
035.19	5.25	4.25	3.95	—	—	—	—	55
035.20	3.75	2.75	2.50	—	—	—	—	55
035.32	40.00	—	—	—	—	—	—	54
035.31	60.00	—	—	—	—	—	—	54
192.01	.29	.23	.17	.16	.15	—	—	27
129.83	1.25	1.00	.90	.85	—	—	—	10
399.52	.18	.09	.06	.04	.035	.032	.03	33
192.02	.17	.09	.07	.05	.045	.04	.035	27
029.03	.29	.23	.23	.23	—	—	—	16
192.05	.12	.07	.06	.045	.04	.035	.03	27
151.05	3.25	2.50	2.35	2.25	—	—	—	15
199.26								
Ten Commandments of Safety in Machine Operations (4" x 7"), ea.	.10	.05	.03	.02	—	—	—	28
199.27								
Ten Commandments of Safety in Machine Operations (9 1/4" x 10 3/4"), ea.	.30	.25	.20	.18	—	—	—	28
194.32	.15	.05	.025	.015	.014	.013	.012	34
195.69	.12	.07	.06	.045	.04	.035	.03	30
152.21								
30 Short Safety Talks For Tailboard Meetings, ea.	1.70	1.40	1.10	1.00	—	—	—	18
194.31	.15	.05	.025	.015	.014	.013	.012	34
192.09	.20	.10	.08	.06	.055	.05	.045	31
192.04	.12	.07	.06	.045	.04	.035	.03	27
129.84	2.50	2.00	1.90	1.80	—	—	—	10
192.08	.20	.15	.11	.09	.085	.08	.075	27
399.51	.07	.05	.025	.02	.018	.018	.017	33
294.03	.17	.10	.08	.058	.05	—	—	35
294.04	.17	.10	.08	.058	.05	—	—	35
599.92	.10	.04	.03	.025	.022	.021	.02	33



Help your workers achieve



# national safety calendar

the nation's Number 1  
safety training aid

The National Safety Calendar is given to more employees, by more companies, than any other of the 4000 items produced by the National Safety Council. And there's a good reason for this popularity—the 'round-the-clock safety fostered by these bright training aids plays a big part in creating a successful safety program.

- \* Nearly 3 out of 5 accidents occur during the off-the-job part of the work day—and your company foots the bill in lost manhours. *'Round-the-clock safety helps cut down off-the-job accidents!*
- \* Workers trained in 'round-the-clock safety are more safety minded all of the time—have fewer accidents on the job!
- \* 'Round-the-clock safety education pays a big, extra dividend in employee loyalty and good will toward your company!



DECEMBER							JANUARY 1956							FEBRUARY						
1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8	9	10	11	12	13	14	8	9	10	11	12	13	14	8	9	10	11	12	13	14
15	16	17	18	19	20	21	15	16	17	18	19	20	21	15	16	17	18	19	20	21
22	23	24	25	26	27	28	22	23	24	25	26	27	28	22	23	24	25	26	27	28
29	30	31					29	30	31											

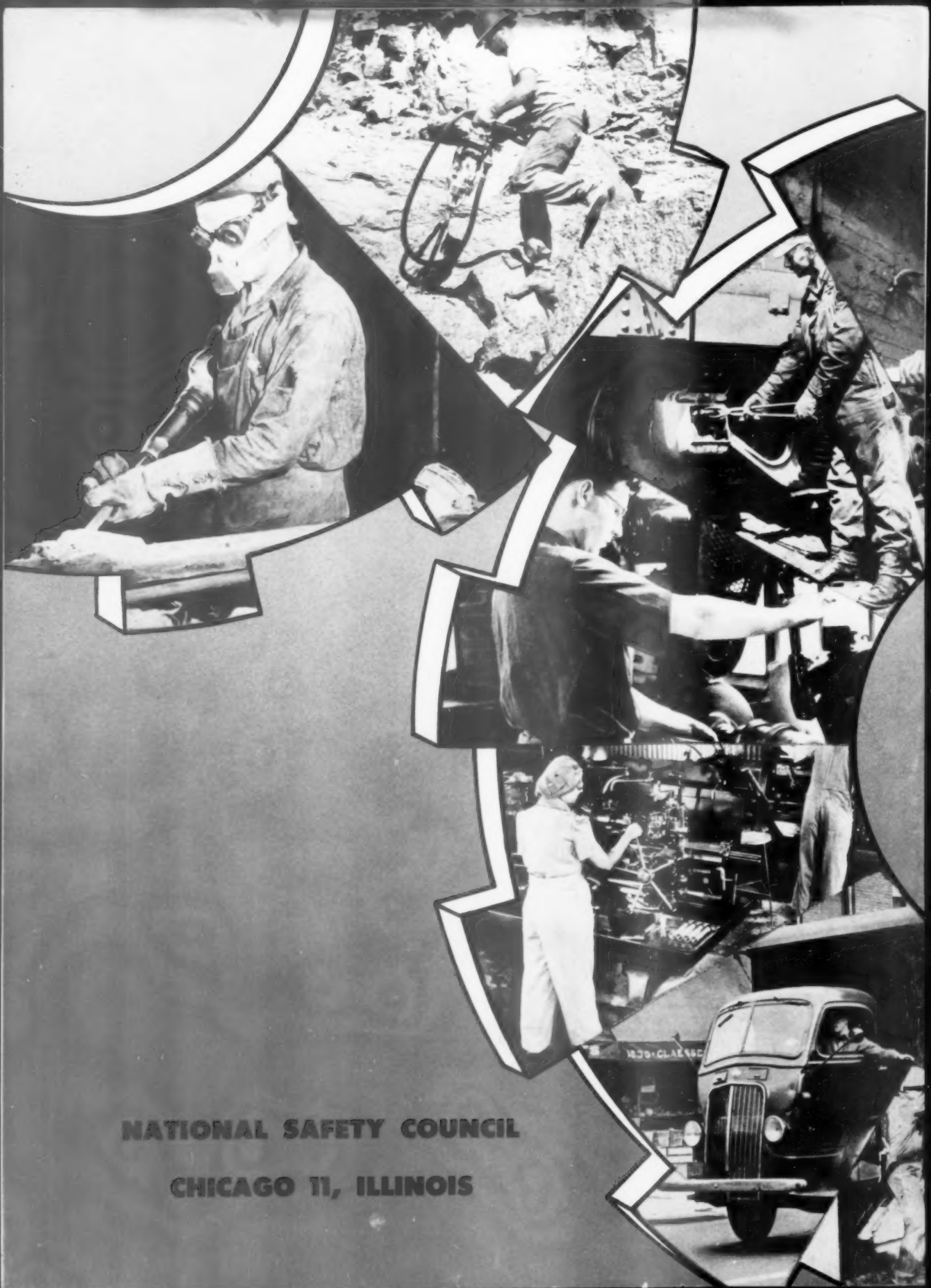
*It's not the RIGHT way if it isn't SAFE*  
NATIONAL SAFETY COUNCIL



The National Safety Calendar is the one training aid you can put in your employees homes that will work for you day after day for a solid year. 12 full color, whimsical safety picture-reminders, and 12 pages of sound safety tips. Families that look to the National Safety Calendar know more about safety . . . *think* more about safety—at work, at play, in traffic, in the home.

## MONTHLY CASH PRIZE CONTESTS

Only employees, and their families, of organizations which are members of the National Safety Council, are eligible to try their hands at the big monthly "save-a-life line" contest which is a feature of the National Safety Calendar. It's easy for them to enter—they just write a rhyming last line for the limerick on the back of each calendar page, and send them in. And since the limericks are about safety—the employee and his family give that much more time and attention to thoughts of accident prevention. Plan now, to let the 1957 National Safety Calendar double the scope of your safety program. Write for full details.



**NATIONAL SAFETY COUNCIL**

**CHICAGO 11, ILLINOIS**